

Engineering
Library
In This Issue—Service on a Flat Rate Basis

MAR 17 1921

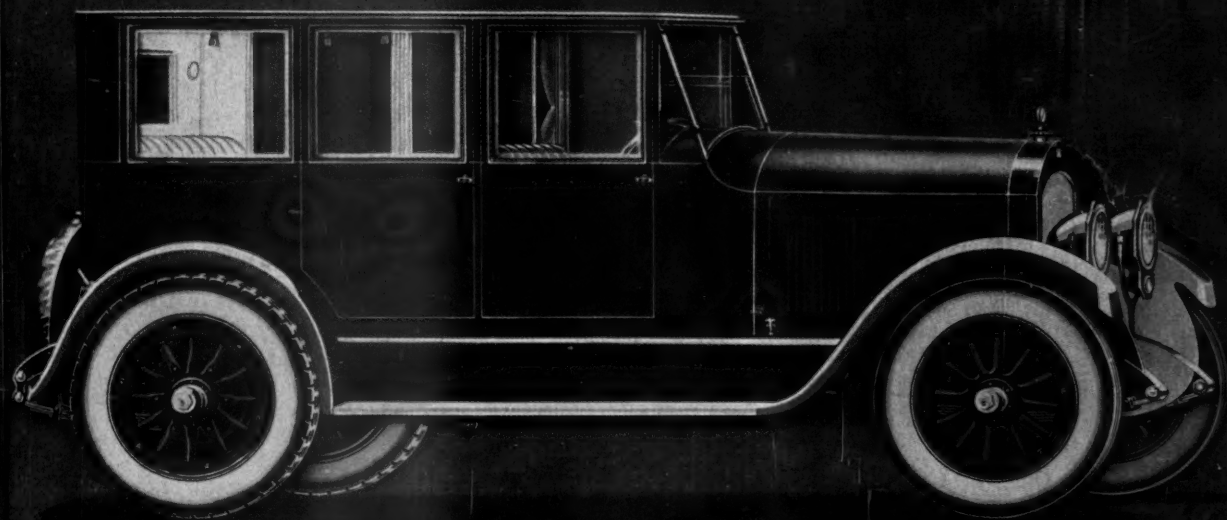
MOTOR AGE

Vol. XXXIX
Number 11

PUBLISHED WEEKLY AT THE MALLERS BUILDING
CHICAGO, MARCH 17, 1921

Thirty-five Cents a Copy
Five Dollars a Year

THERE'S A TOUCH OF TOMORROW IN ALL COLE DOES TODAY



Tourosine

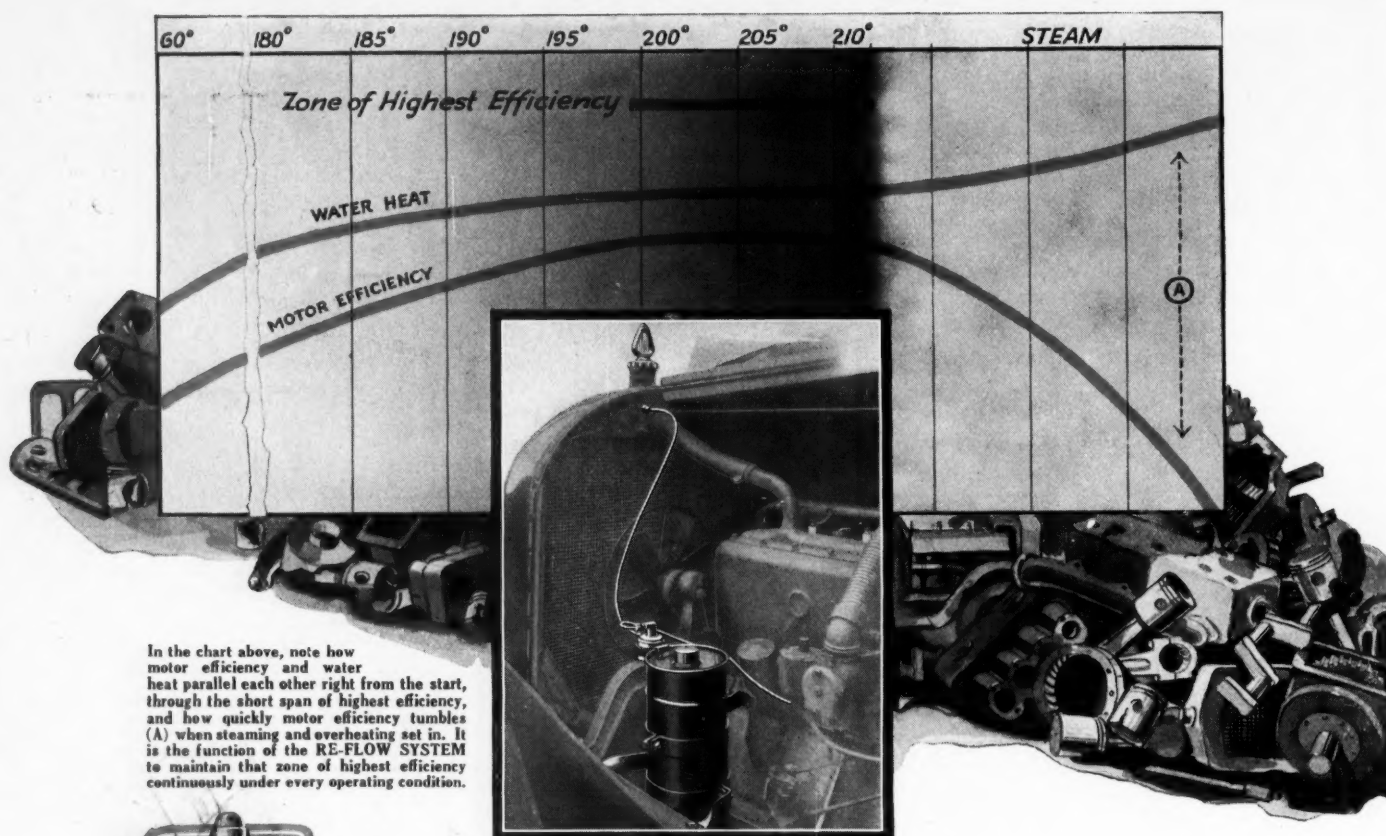
Cole Aero-EIGHT



Its 15,000 miles on tires; its 12 to 14 miles per gallon of fuel, bespeak its remarkable economy, while the zero balance

of the *Cole Aero-EIGHT* assures perfect driving ease and comfort under all conditions of travel.

COLE MOTOR CAR COMPANY, INDIANAPOLIS, U. S. A.
Creators of Advanced Motor Cars



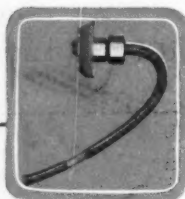
In the chart above, note how motor efficiency and water heat parallel each other right from the start, through the short span of highest efficiency, and how quickly motor efficiency tumbles (A) when steaming and overheating set in. It is the function of the RE-FLOW SYSTEM to maintain that zone of highest efficiency continuously under every operating condition.



The ornamental radiator indicator of the Re-flow System keeps the driver informed as to what is taking place in the cooling system.



The Re-flow tank holds reserve supply of water. A whistle sounds a warning when reserve needs replenishment. Valve at top automatically keeps radiator full all the time.



A constant slight flow of vapor is carried into intake manifold which humidifies the carburetion mixture to a safe degree.

How Science Has Curbed the Overheating Evil

MILLIONS of dollars in replacement bills and motor destruction is the price that motorists pay for their simple indifference to the importance of keeping the cooling system operating to full capacity at all times.

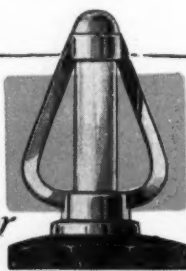
Now Science has taken that neglected task out of the owner's hands. It has found a way to change present day cooling systems from a variable hit or miss element of protection to a continuous factor of high motor efficiency under every operating condition. It is accomplished by the *Re-flow System*.

It is the business of the Re-flow System to curb the overheating danger by automatically keeping the radiator full of water all the time. With the cooling system operating to full capacity, the motor operates continuously within the shaded zone of highest efficiency (see chart).

The Re-flow System is easily installed on passenger cars, trucks and tractors now in use. Sold only through State distributing organizations. Descriptive circular sent on request.

Weeks Manufacturing Co., 421-437 National Ave., Milwaukee, Wis.

"The
Mark
of
the
Cared-for
Car"



The Weeks
Re-flow
System

MOTOR AGE

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No. 11

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What do you know about Automotive Electricity?

Make yourself master of the **one most important technical branch** of motor car repair work, and you rise above the lot of the mechanic.

Electrical problems are the most frequent and least understood of all motor car troubles. And the man who is able, **because of expert training**, to solve them intelligently and quickly, will find a bigger and better paying job awaiting him.

The N. Y. E. S. course fits you by **ACTUAL PRACTICE** to handle every kind of repair, replacement and installation job on every make of starting, lighting and ignition system known to the automotive industry. This includes farm lighting and power plants and airplane systems as well.

At the N. Y. E. S. you **LEARN BY DOING**. You learn electrical theories by **applying them**. You familiarize yourself with all auto electrical systems by **working on them**. An apt student can complete the course in ten weeks.

Learn the facts about the demand for electrically trained men. Tear off and mail this coupon for full information on the N. Y. E. S. automotive-electric course.

THE NEW YORK ELECTRICAL SCHOOL

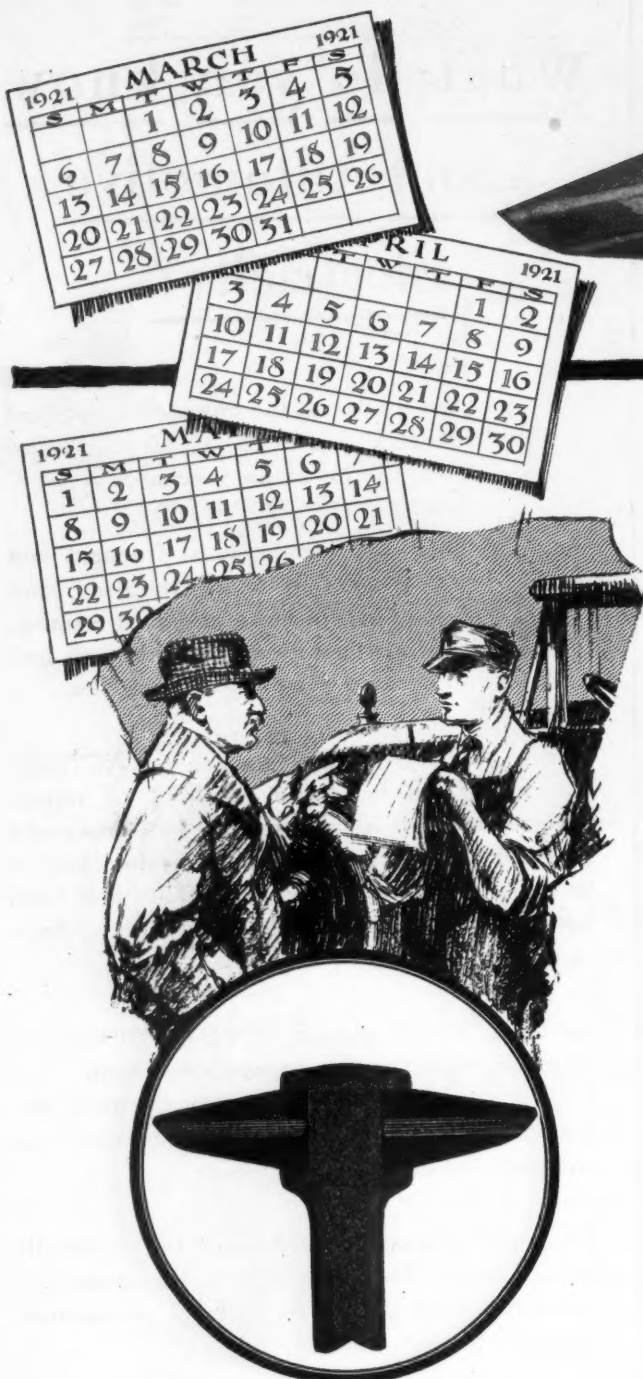
36 W. 17th Street
New York

Send me prospectus and full details of course in automotive electricity and your "learn-by-doing" method.

Name _____

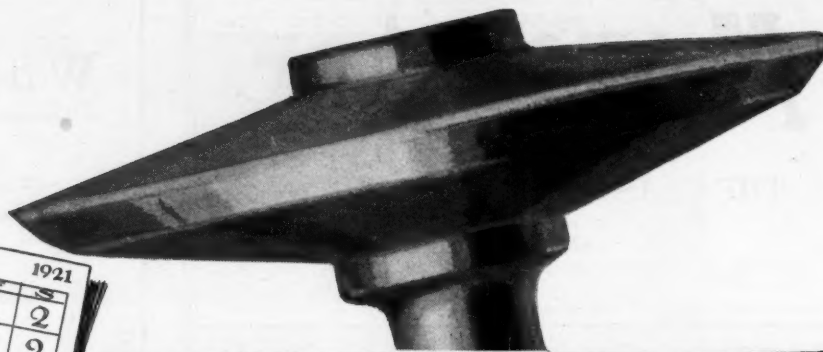
Address _____

I am employed by _____



Cross-Section of a Flexedge Valve

Illustrating the structure of Flexedge Valves. As the valve head strikes the seat the edges of the laminations are flexed slightly and free the seat of carbon deposits. Thus the valve seats itself and always holds compression.



Take Full Advantage of Overhaul Season

When a customer brings in his car to be overhauled he's in a buying mood—he's open to suggestions. You'll never find a more opportune time for selling new equipment.

Take valves, for instance. When the car is brought in the valves are carbonized and your customer knows it. The time is ripe to sell him Flexedge Valves—the valves that prevent carbonization. Point out that Flexedge Valves keep the valve seats clean and free from carbon *always*. Tell him *why* they do it—because the valve head is made of laminations, tightly compressed, which flex the minutest fraction of an inch at each stroke and thus free the seat of carbon accumulations. A few minutes talk will convince your customer and you'll make as much profit from the sale of a set of Flexedge Valves as you would on several valve grinding jobs. Furthermore, you'll win the customer's good will and get a stronger hold on his business.

Begin selling Flexedge Valves *now*. Your jobber should be able to supply you. If he can't, write to us.

SELF SEATING VALVE CO.

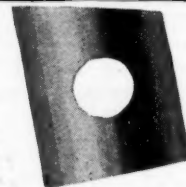
708 Townsend St.

Chicago,

Illinois

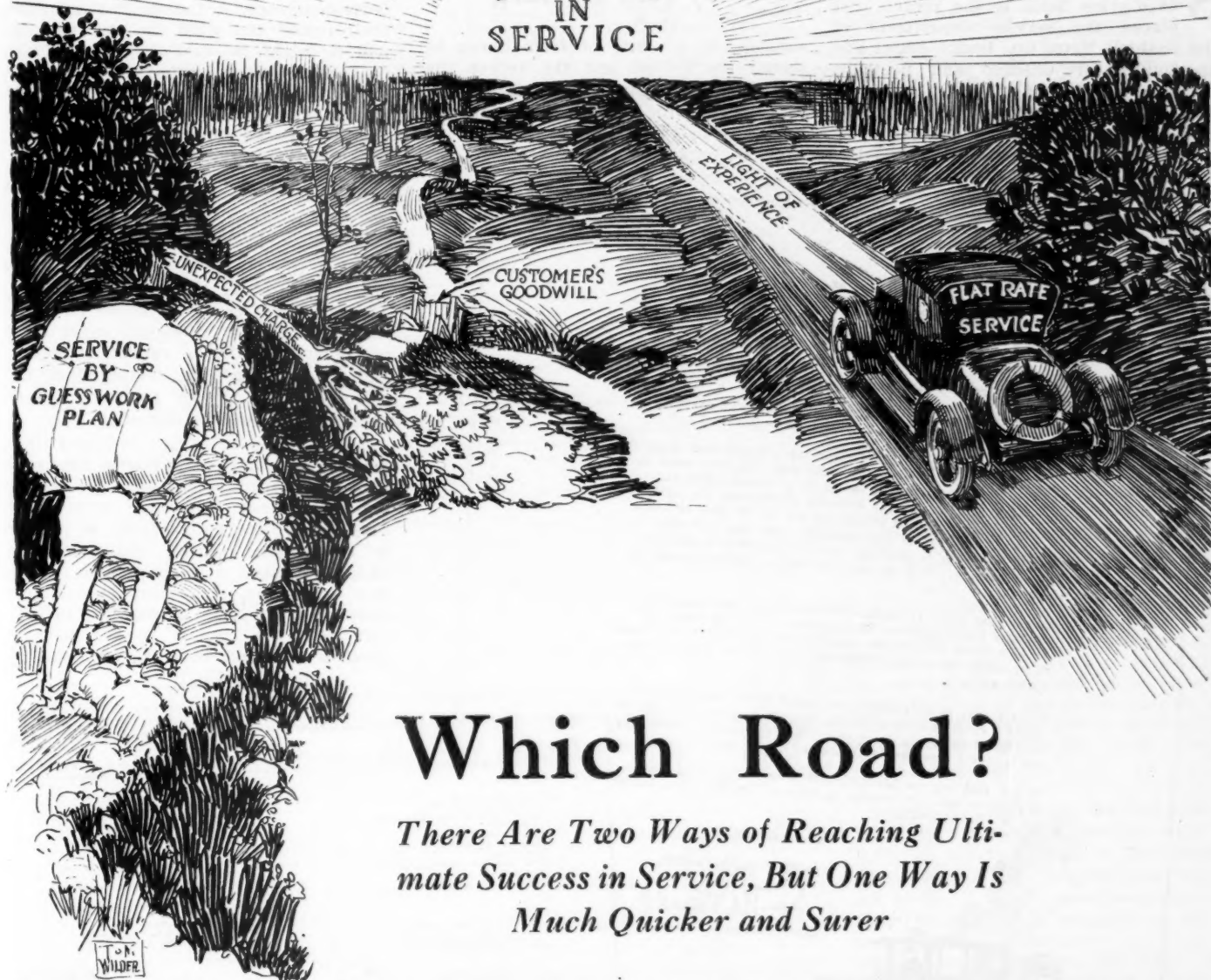
Flexedge

VALVES You Never Need Grind



MOTOR AGE

SUCCESS
IN
SERVICE



Which Road?

There Are Two Ways of Reaching Ultimate Success in Service, But One Way Is Much Quicker and Surer

TOO many automotive establishments have been taking the rough and rugged road in their attempt to reach ultimate success in their service, whereas a few, guided on their way by the light of experience, are taking an "air line." Many authorities tell us that ninety per cent of the service stations and shops of the country will eventually operate their service on the flat rate or fixed-price system.

Service by the guesswork plan means a slowing up. There are too many factors that stand in the road to success. There is always the unexpected charge. The car owner thinks his bill will be twenty dollars and it is forty. Progress is halted, too, by the breakdown of the customer's good will and when that is so, the dealer might as well pack up and quit.

Service by the guesswork plan is too heavy a load

for the dealer to carry. Under the load of it he staggers along with his eyes on the ground and does not see the straight, smooth road close at hand over which he might travel. Let him rid himself of the load first. Then he is in a position to look around and discover the right road. Others have done it and the most remarkable thing about it all is that those who have taken on the fixed-price system or flat rate service, call it what you want, are unanimous in their opinions that it is the only way in which the service question ever will be correctly dealt with.

Read on the following pages what one Chicago dealer has done with the flat rate service plan. Yours may not be as large a service station but what has been worked out in this service station can largely be applied to every service station, big or little.

Service on a Fixed-Price Basis

The Service Department of the Dashiell Motor Co. Has Been Placed on a Paying Basis by Means of the Flat-Rate Service System. Its Details Are Described Here

SERVICE sold on a flat-rate or a fixed-price basis is the means that placed the service department of the Dashiell Motor Co., Dodge dealer and distributor for Chicago and northern Illinois, on a paying basis. Also, the flat rate system as practiced by this company has greatly reduced the number of complaints of customers and has

By Roy E. Berg

established a spirit of friendliness between the served and the server that never before existed. Because the flat-rate system for service work gives a means to calculate beforehand what the service charge will be, it has been pos-

sible to place before the owner through correspondence, a list of car troubles, their repair and what the cost will be; and it might be said that the returns on circular letters to the 7,000 customers of the Dashiell Motor Co., outlining the service system and what the flat-rate charges are for the various operations, has been gratifyingly successful.

There is an element of psychology that enters in the purchase of anything, whether it be service or anything else. If a commodity is purchased and the price of the article is in doubt there is created a feeling that all is not well. The purchaser conjures before his mind the thoughts that when the exact price is known, he will be rudely awakened, and he also has the feeling that the price will be known as soon as, or shortly after he has signed up.

Delivery and price are two important factors that are ever before the eyes of a purchaser, and we have the feeling that with many motor car owners the subject of price with regard to service is of greater import than delivery. Therefore, when it is possible to lay before an owner an itemized statement showing what is to be done to his car and what the cost is to be, there is created a feeling of trust between the

DASHIELL MOTOR CO.
DODGE BROTHERS MOTOR VEHICLES
CHICAGO

February 16, 1921

Mr. Dodge Brothers Car Owner:-

You will be glad to know that because of reduced costs we have been able to lower our charges for repair work.

As proof of this fact we are inclosing a folder that shows our prices on six "standard" repair jobs. We find there is certain repair work that a car needs at stated intervals. Of course this work varies with the mileage and the care which the car gets. In normal use one of the jobs outlined in the attached folder will probably cover the work you should have done on your car to put it in satisfactory running condition. Your car may need only a thorough greasing and oiling.

We have had years of experience in the care and operation of Dodge Brothers Cars. We guarantee to our customers a dollars worth of value for every dollar spent with us. These things make our Service Department the logical place for your repair work.

It will only be a few weeks until our large shops will be crowded with the rush of Spring and Summer work. It will be to your advantage to check over the enclosed list right away and have the necessary work done at this time.

If you want any further information before bringing your car in, please call our Service Department, Calumet 7300, and ask for Mr. R. B. Groll.

Sincerely yours,

DASHIELL MOTOR COMPANY.

R. M. Paul
Superintendent of Service.



The care your Dodge Brothers Motor Car may need

No. 1 Tuning Motor

Grind valves (Note—New valves \$1.00 each).
Clean carbon.
Adjust tappets.
Clean and adjust distributor points.
Check timing.
Clean and adjust carburetor, installing new gaskets.
Blow out fuel line and clean vacuum system.

\$12.05

No. 2 Oil and Grease Car

Turn down and refill all grease cups.
Oil all brake connections.

\$1.85

No. 3 Tighten Car

Tighten body and motor bolts.
Tighten all fender bolts.
Tighten spring shackle bolts.
Tighten spring clip bolts.
Tighten and adjust front and rear wheel bearings.
Adjust starter chain.
Tighten tie rod bolts and steering knuckle bolts.
Tighten rear spring seat straps.
Tighten rubber bumper on doors.
Tighten rod pans.

\$15.35

No. 4 Rebuild Front Axle Connections

Install new tie rod bolts and bushings.
Install new steering knuckle bolts and bushings.
Line up front wheels.
Take end play out of drag link.

\$11.80

No. 5 Clean and Refill Lubrication System—Entire Car

Wash out rear axle and install fresh grease.
Wash out transmission and install fresh grease.
Drain crank case, clean strainer, flush case and install fresh oil.
Grease universal joint and propeller shaft bearing.
Clean and repack steering head and drag link, both ends.
Turn down and refill all grease cups.
Oil spring shackles and brake connections.
Clean, grease and adjust all wheel bearings.
Oil spring leaves.
Grease clutch yoke and shaft.

\$16.35

No. 6 Overhaul Motor

Remove oil pan and cylinder head, installing fresh oil, new gaskets and water hose.
Clean carbon.
Grind valves (valves extra \$1.00 each).
Install new rings.
Install new wrist pins and bushings.
Tighten connecting rod bearings.
Tighten main bearings.
Check up on oil clips and tube.
Repack water pump.
Clean and adjust carburetor.
Clean vacuum and blow out fuel lines.
Clean and adjust points.
Check timing.
Adjust starter chain.

\$64.85

NOTE.—If necessary to re-bore cylinders and furnish and fit new pistons, add \$42.70.

These prices include both labor and material, unless new valves should be required in No. 1 and No. 6.

The above letter sent to the customers of the Dashiell Motor Co., Chicago, brought sufficient response to fill the service station with work for a period of three weeks. The establishment is capable of turning out about 100 complete jobs a day, but on the average the work runs from 50 to 60 complete jobs, varying from a mere adjustment to a complete overhauling. Of course, the business would not have been brought in if it had not been for the pamphlet shown to the right, which gives the exact prices for six standardized motor jobs. These vary from a mere engine tuning to a complete overhauling. This form is well worth while studying

service department and the owner. He leaves the establishment knowing that his car will be ready at a certain time and that when he calls for it, he will have to pay a certain price, and the fact that he carries a signed statement in his pocket attesting to the price and outlining what work is to be done on the car, gives him further assurance that everything is right.

If he is an owner who has had cars for a number of years, and has had dealings with service stations in general, the thoughts might come back to him at this time, contrasting the vast improvement in his mental attitude toward the service station. In previous years it had been his custom to leave his car for work to be done, and then to leave the building with improperly formed thoughts about what the work would cost him. It used to be that he was told the cost would be about so much, and when the final reckoning did come, it was not unusual to pay three times the estimated cost. Now, however, he is handed a statement signed by a service department official guaranteeing that the work listed would cost a stipulated amount, and in his mind he is satisfied.

Each Department Gets a Copy of the Work

WORK ORDER
DASHIELL MOTOR CO
DODGE BROTHERS MOTOR VEHICLES
PHONE CALUMET 7300

DATE 3-2-21
JOB NO. 41764
TEST NO.
LICENSE NO. 434638
CAR NO. 546648
MOTOR NO. 594346
DATE DELIVERED 11-17-20
TYPE Touring
MILEAGE 62868

NAME John Doe
ADDRESS 334 N. Washington St.
PHONE NO. Randolph 3400
PROMISED Tuesday PM 3/4/21

NO CHARGE
NO CHARGE
CHARGE

1
X Remove oil pan and cylinder head
Install fresh oil, new gaskets and water hose
Clean carbon
Grind valves (valves extra 1.00 each)
Install new rings
"Lighten" wrist pins and bushings
Tighten connecting rod bearings
Tighten main bearings
Check up on oil dips and tube
Repack water pump
Clean and adjust carburetor
Clean vacuum and blow out fuel lines
Clean and adjust points
Clean and adjust chain

3rd floor
McBartley
900 6th St
64 86

TOTAL AMOUNT

John Doe


Above is shown the form filled out by the service salesman in the presence of the owner. When everything is satisfactory to the owner and he knows exactly what is to be done on the car and what the cost will be, he signs the ticket carrying one of the carbon copies with him. This form is made out in quadruplicate and in size it measures 8½ in. by 9 in.

Hence we find that the flat-rate or fixed-price system is meeting with the favor of the customers of the Dashiell Motor Co. With the system as worked out by F. M. Paull, service manager of this company, it is possible to reduce every service operation to a series of standardized operations, and, since each operation may with several others be grouped together to form a complete service job, it is possible to estimate accurately just what the cost will be.

Mr. Paull stated in answer to the question as to whether or not the flat-rate system as devised by him could be applied to any service station regardless of size, handling some one make of car, that he thought it could.

It is true that a great many models of one make would seriously complicate and might even hamper the installation of the system. But the satisfaction that results from the flat-rate service system would be an incentive, Mr. Paull said, for him to install the system re-

WORK ORDER
 Motor Co. ⑧
 JOB RECORD ⑦
 PAID SERVICE DEPARTMENT ⑥
 SHOP RECORD ⑤
 OFFICE RECORD ④
 Motor Co.



DASHIELL MOTOR CO.
DODGE BROTHERS MOTOR VEHICLES
CHICAGO

SERVICE DEPARTMENT
 WABSEN AVE. AT 88TH ST.
 CALUMET 7800

DATE 3/2/21
 John Doe
 334 W. Washington St.
 No 41764

TERMS: CASH ON DELIVERY
 CAR NO. 546R48

Remove oil pan and cylinder head.
 Install fresh oil - new gaskets and water hose.
 Clean carbon.
 Grind valves - valves extra 1.00 each.
 Install new rings.
 Install new wrist pins and bushings.
 Tighten connecting rod bearings.
 Tighten main bearings.
 Check up on oil dips and tube.
 Repack water pump.
 Clean and adjust carburetor.
 Clean vacuum and blow out fuel lines.
 Clean and adjust points.
 Check timing.
 Adjust starter chain.

As per contract.
 REBORE CYLINDERS - FURNISH AND FIT NEW PISTONS.
 AS PER ADDITIONAL ORDER.
 VALVES EXTRA:
 ONE VALVE.
 LESS SAVINGS EFFECTED BY LABOR.
 *THIS CAR NEEDS THE FOLLOWING WORK:
 BRAKES NEED RELINING.
 LEFT FRONT WHEEL BEARINGS NEED ADJUSTING.

1.85
 42.70
 107.55
 96
 108.51
 7.50
 101.01

DELIVERED

LICENSE NO.

JOB No 41764

The typewritten copy of the work to be done is made by the order clerk from the handwritten copy of the work order made by the service salesman. This eliminates the possibility of error from any misinterpretation of the writing. This form is typed with four carbon copies, but all sheets are not the same size

Additional Work Order

Job No. 41764 Name J. Doe Date 3-3-21
 Promise Monday 3-7-21 Address 334 W. Wash. St.
 Ordered by John Doe Time 8:00

Rebore cylinders—furnish and fit new pistons.	42.70
Confirming telephone conversation.	
3-Hours	
TOTAL	
Previous Estimate	64.85
This brings total price to	107.55

If it is found by the mechanic on the job that the car requires more work than is called for on the flat-rate ticket which the owner signed, the owner is immediately called on the telephone and notified of the findings. If his permission is secured to go ahead with the additional work, an Additional Work Order is made in quadruplicate from the one hand-written copy which is not shown here. Then by means of the mucilage strip on the back of the form each additional work is pasted to each one of the typewritten orders, thus making the work record complete.

regardless of how many models there were.

The system as described here is a very elaborate one. Because the company has 7,000 customers, there must necessarily be an organization to handle the work and wherever there is a sizable organization the matter of routine methods must be a part of the system. But we firmly believe that the size of this organization does not necessarily constitute a limiting criterion for the operation of the same system in smaller establishments, which thought we would ask our readers to bear in mind as they study the details of the plan.

In the standardized time and cost record book is kept a complete list of every imaginable service operation on the Dodge. These do not merely include engine work but such operations as straightening the frame or replacing broken frame horns, replacing or resetting the springs, removing carbon, all electrical work, in fact as just stated, the book contains a list of everything that might ever have to be fixed or adjusted on the Dodge car.

Never during the course of repair of a vehicle is anything done that was not clearly explained to the owner, and should it so happen that something unforeseen develops during the repair, the owner is consulted immediately by telephone, the circumstances explained, and his permission secured to go ahead with the work. What additional charges may be necessary for this extra work are accurately estimated and when these facts are made known to the owner he

generally sees without further argument the reason for the charge.

There are so many benefits accruing to both the car owner and the service station through the use of this system that it is well to take a trip through the shop along with the forms that are used in the work. Through the courtesy of the service department, and its efficient service manager, Mr. Paull, we have been able to secure a complete set of forms, filled out to explain a certain standard motor operation. It is well to deal somewhat here of what this operation consists and how the owner is acquainted with it.

Realizing that there was a possibility of the company cashing in on its splendid service system among its customers, a form was prepared, showing six standardized operations on the engine and what their cost was. This form was sent around to each of the company's customers with a letter from the service manager. Operation number six as can be seen from the form consists of a motor overhaul and costs \$64.85. In the forms we have had applied this operation. Certain little things it has been assumed have arisen during the work which made it necessary for the service department to consult the owner and all these operations may be gleaned from the forms and the following part of the story.

When the owner first brings his car into the Dashiell service station he is met by a service salesman. The owner drives his car into the service salesroom,

a large, well lighted room on the first floor of the building, occupying about half of the first floor space. Here the owner and salesman discuss the car's needs, and whatever is decided to be done on the car is written by hand on form No. 1. The price of the work is given on the form and the owner knows then and there what the cost is to be. As shown in this form the price for the motor overhaul is \$64.85. Everything must be satisfactorily explained to the owner and when it has been he signs the ticket. Then he is given the call or claim check, form No. 2, and a signed copy of the work order, and is told when the car will be ready. From now on the car is in the hands of the service department. The owner does not follow the car around through its routine in the shop as this interferes with the workmen and their ability to keep within the bogy time allowed on the various operations.

We now revert to form No. 1. As was explained there this form is written out in long hand by the service salesman, and four forms, or three copies are made simultaneously. The claim check, form No. 2, which is made so that it may be torn into three parts, has one section that is given the owner; another section is sent with the car, and convenient wires secured to the form permit the service foreman to place the wires around the radiator cap; the third section of the card goes to the floor foreman and is hung on a work schedule board in plain view of the foreman. From this board he may tell at a glance just how many jobs are posted and whether or not the work is being done on schedule time.

HAND WRITTEN FORM TYPED TO AVOID MISREADING

As soon as the service salesman has sold his service, and written his ticket, the four duplicated forms he produces are sent to the order clerk. Here the order clerk makes out a typewritten order of the work, in order that perfectly legible characters may be in plain view of the mechanics, the billing clerks and all others who come in contact with the forms. By this means it is possible to trace and assign all errors directly to this order clerk, that is any errors resulting in a misreading of the forms. The order clerk is skilled in deciphering handwriting, and is familiar with the hands of the various service salesmen. Therefore the possibility of errors through misreading any of the forms is rather remote. The order clerk makes six typewritten copies of the original hand written form. It seems at this point that the order clerk writes rather more copies than is necessary, but as will be explained later all have their place to go and their function to perform.

The second series of forms pertaining to the work are not all identical. As far as the actual writing by the order clerk on the forms is concerned, they are identical, but the size and printed matter on the different forms vary quite a bit. The first form of the type-

written series No. 3 is sent to the billing department where it is given the cashier to hold until the car is called for, and the amount paid. The first carbon copy of form No. 3 is exactly identical as to its permanent printed matter. This form is sent to the main office of the company and is held there as a permanent record of this particular service operation. Two holes are punched in this form permitting its insertion in the record book. The next form No. 5 is slightly larger than the other two forms and contains on the bottom of the form such material as the car owner's telephone number, the motor number, the car number, the license number and the date of delivery.

Though this listing may seem elaborate it is very helpful for it has been the means of identifying a great many stolen cars. When the work is done the cost of the service operations is noted on this sheet and it is then held in the service station office. Form 6 is identical with the preceding form and it is held in the service office until the work is done at which time it is sent to the field service department, more of which is told later on in this story. Form No. 7 proceeds to the shop office, and the shop foreman is able to tell from this form just what should be done on the car and what has been done.

Form No. 8 proceeds along with the

The tester's O. K. ticket is conventional and bears such information as the car license number, the job number and the type of car. Thus there is no chance for confusion when checking against the original work order. The claim check is interesting because with it the work is immediately assigned to its department. The middle portion of this form is sent the shop office where it is placed on a large call board and from it may be determined how the work is progressing. The back of the owner's stub bears a small red sticker on which is printed Stop, Think. It is a reminder to the owner that if there are valuable articles in the car they may be checked in the lockers provided for the purpose.

These forms the owner never sees, but they play a very important part in the work. The time ticket enables an accurate check to be kept on each man, and it may be learned from it whether or not the men keep within the established time limits for the various operations. This form measures 5 1/4 in. by 6 1/2 in.

shop office record to the shop office, but the clerk in the shop office detaches one from the other and secures form No. 8, the car ticket, to the car. It is placed in a celluloid faced envelope having on its right hand edge a slot through which the mechanic may insert his pencil and check off the items as they are accomplished.

If it so happens that the mechanic on the work discovers some additional work is required on the car not specified on the ticket he informs his floor foreman. The floor foreman notifies the service office downstairs and at the same time makes a notation on the ticket that the car needs to have its brakes relined, or something similar. The service salesman who originally sold the customer the work, preferably, or any other service salesman, then calls the customer on the 'phone and explains that in the course of the work they have found that the brakes are badly worn and for the sake of safety it is a cheap insurance to have them taken care of.

Perhaps these words are not used but some sales talk is used nevertheless, and when the salesman has convinced the owner that the brakes really need the relining, and his permission is secured to go ahead with the work, he is then told that additional charge is being made out which will be attached to his bill. Of course, this being the flat rate service system the owner is told exactly what it will cost to fix up his brakes. However if the owner refuses to have the work done it is no fault of the service department if he reappears a few weeks later with a smashed up car due to brake trouble, for it appears indelibly on the records that he was advised of the neces-



This is the building of the Dashiell Motor Co., Chicago. The system used here is elaborate simply because a large organization is necessary to handle the volume of business. In smaller institutions the system would not need be so elaborate

sity for having his brakes taken care of, the last time he was in the service station.

The additional work order is made out in six copies also, and one of each of these orders is affixed to each one of the typewritten forms, thus producing a permanent record of all that transpired between the owner and the service department. This form is shown as No. 9. When new parts are ordered by the foreman for the work he makes out a material requisition in triplicate, form No. 10. The original goes to the billing department, the duplicate remains in the parts department and the triplicate is placed in the office file for this particular car. It is held there as record of the new parts that were installed in the car. When the car is finished the tester places a red tag on the radiator bearing his O. K. This is form No. 12.

One other form not involved in the owners' records or the cars' records directly, but concerning very pertinently the service department and the mechanics, is the Time Ticket form No. 11. This ticket gives the time that each mechanic spends on his operations. The bogy time allowed for the operation is also placed on this ticket. Thus the service manager at the end of the month is able to look over the reports and tell which of his men are coming within the allowed time and which are not.

When the owner calls for the car, he first visits the cashier and after having settled his obligations here he then is given his car by a car "hiker."

At this point we are introduced to field service department, previously mentioned in the story. After the owner takes the car home and has had it about two days he receives a call on the 'phone from the field service manager's secretary. In the meantime the form for the field service manager has been dispatched to his department and it is kept on file here. At the expiration of the two days of grace, the girl calls the owner and inquires about the car. If there are any com-

plaints to be made the owner naturally will have had time to think over what he would like to say in the event he ever had the opportunity to say it. Consequently when the girl calls him on the 'phone, she generally learns whether or not everything is right.

If the work was perfectly satisfactory, the field department files its form and that job is considered done, but if there is a complaint the girl gives the record of the work done on the car to the field service manager and he in person calls on the owner. Whatever the grievances are they are amicably settled and if the

THE fixed-price service system as operated in this establishment is spreading satisfaction throughout the whole Dodge family in Chicago. The customers are satisfied because they know what their charges are going to be before they leave the building. The mechanics are satisfied because they have the opportunity to better their incomes and become real live factors in the organization. They are regarded as the producers, not the greasehounds. The management is satisfied because complaints have been almost eliminated, and of as great if not greater importance, the service department has been put on a paying basis.

field service manager finds that the work really was slighted, then he instructs the owner to bring his car into the service station where whatever is wrong with the work is fixed up. As a panacea for all troubles the field service department comes the closest to being the real thing for disgruntled service customers.

There are still some things about this particular flat-rate service plan that are not as yet apparent, and one of the most important things that concerns the operation of this plan, we have yet to explain. As a good-will builder among its customers, and as a criterion constantly

spurring the mechanics on to better and better and speedier results there is the bogy time allowance with its rebate for the customer should the mechanic succeed in doing the repair work in a shorter time and the bonus to the mechanic, proportioned according to the number of hours saved on the jobs.

The working of justice is seen in the owner rebate and mechanic bonus system, for with it the careful car owner and the rapid and thorough mechanic are properly provided for. The careful owner is not made to pay the same amount as the owner who neglects his, in nine cases out of ten. If an owner has thoroughly taken care of his car, kept it well oiled and greased and clean from dirt, it stands to reason that service work on that car will be greatly facilitated. A shackle bolt that has been well taken care of will not present the difficulties in its removal that a neglected bolt would present. Also the mechanic who is able to do his work in a shorter time than the allowed time should be compensated and according to this system he is. The details of this system provide that the saving the mechanic is able to effect in labor hours in performing his duties, over the regular allowed time, is divided between the mechanic and the car owner.

WORK IMPROPERLY DONE CHARGED TO MECHANIC

It is highly appreciated by a car owner to learn several days after his work has been performed, through a letter from the service department, that it took several hours less to do the work on his than the regular allowed time and therefore a check is enclosed as a rebate. At the end of the month the mechanic's time is figured up and his diligence is rewarded accordingly. Some mechanics in this establishment are able to increase their pay by as much as twenty-five to thirty dollars a month. There is a "but" to this scheme, however, and this affects the slovenly mechanic.

Should it happen that the field service department finds a cause of complaint that is justified by slovenly work on the part of the mechanic, the car is brought back and fixed on the mechanic's time. These incentives are enough to spur a mechanic on to greater achievements. The bogy time has not been fixed as representative of an unattainable goal. Rather it has been fixed as representing an average that a man of fair intelligence may equal by conscientious work, and further, may by diligent application be bettered.

It is a surprising thing what the bogy time allowance reveals in the way of the capabilities of the men. As has been found in many other service stations using the flat-rate service system, the men who on the surface appear to be super mechanics, are not many times the best mechanics in the shop. But those who work industriously, sometimes without saying much, are really doing much more work. The mechanic with the "gift of gab" as the vernacular goes, is found to be not the quantity producer that his silent neighbor is.

The SPIRIT of SERVICE

By P. E. Chamberlain

A Story With a Moral for the Service Station

Dear Old Pal:

Ever notice a houn'-dog? Lank and bony, he is the same sort of a fixture in the hill-billy's cabin of the south as is the cockroach—with about the same general standing. He is to be swatted when he gets too close, otherwise he is tolerated as a necessity because there has always been a houn'-dog and probably always will, just as there has always been a cockroach and probably always will.

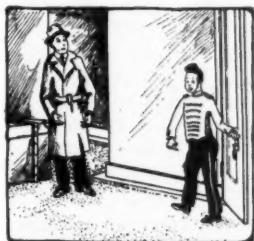


But swat that houn'-dog all you please—beat him and starve him day after day, week after week and then—just pat him on the head of him or snap your fingers in friendly fashion at him! Just see the gratitude spring into his dog-eyes! Just see him come to you and lick your hand and—forgive!

When I called for my key at the desk the hotel clerk could not find it and called a boy to go up and unlock my door. I had turned the key in. It afterward developed that the porter had taken it in my absence in order that he might put in my trunk, and had not returned it PROMPTLY. The boy who took me up and opened my door asked me as many as three times if there "would be anything else" until I told him there would not be anything else—not even payment from ME for making good on a slip of his own organization. Grouchily he went his way. I suppose he will never understand the SPIRIT of service. And the clerk—I had been made to feel that "these fellows who travel do more fool things! And one of them is that they THINK they have turned in their keys when they probably have them in their pockets right this minute."

When my friend Carthinhour showed up a little later he said that he had called me three times that morning and had been unable to get me, much to his inconvenience and mine. I had not left my room.

In fact I worked way into the night on some writing I had been neglecting. It was nearly two o'clock in the morning when I called the operator from my room and asked for an eight-thirty call. At ten minutes of ten I woke up and



he just floats!"

had to hustle to keep a ten thirty appointment. I called the operator and was told in a voice that made me feel about as useless as a glass eye at a keyhole, that there was no record of a call having been left. Evidently in the mind of the girl at the switchboard I had had a lapse of memory. Poor thing! "Say, girlie, didn't we have a swell time last eve? And didyasee me floatin' around with George? Say, kid, he don't dance—

I had checked it over carefully twice and when it came back I checked it carefully twice more. Nothing to it—one pair of my new Christmas silk socks was not among the laundry that was present. The clerk told me I would "have" to see the bell captain and the bell captain said he would see if he could "do anything about it."

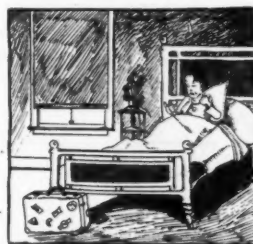
Thus I came to a full realization of the derivation of the word, "HOTEL." It comes from a combination of the word "hot" used as it is in modern slang when one is spoken of as a "hot sketch" and the word "hell," meaning a place where the "guest" is given little consideration as to his personal likes and dislikes. And I had just gotten myself into this frame of mind when—

She was just a maid—an old lady, and I use the word "lady" advisedly. She was just finishing up my room on the last day of my stay in this institution when I went up to write some letters. Just a maid, in her stripped uniform and little cap.

But the SPIRIT of service was in her heart!

"Did you sleep well last night," she said. I detected nothing in the query but the desire for my comfort as a guest of her organization.

I gave her a half a dollar. Oh, how I appreciated a kind word!



"I thank you very much, sir," said said, while the wholesome Irish smile of her beamed forth. "Are you leaving today, sir?"

I said that I was leaving.

"Well, I'd rather see you stay than leave, sir. Thank you again and good-bye." She closed the door as she went out.

And I—well I sat right down to write this story. I am leaving this afternoon and I am leaving with all the malice and desire to get back taken from me. I like this hotel, after all. I've had a kind word said to me—a kind thought expressed for my welfare. And those of us who travel about some, from city to city, from hotel to hotel, giving up the atmosphere of HOME, longing for the deep arm chair and the open fireplace—oh, boy! how we respond to the little friendly word!

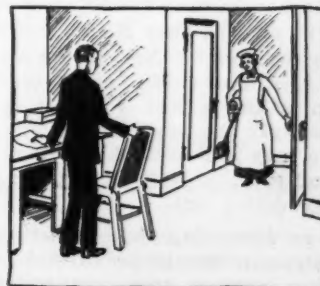
There is a man at the desk in his white collar that I pity! There's a key clerk with a drug store complexion that I hope chokes on the gum she constantly worries with! There's a telephone operator whom, I hope, "George" will see fit to run away with!

But there's an old Irish maid—old enough to be my mother—who has in the heart of her—

The SPIRIT of Service!

Your pal,

Perc-



Free Service Should Not Be Charged Against the Service Department

It Is a Part of the Selling Cost—Granted That It All Comes Out of the Same Pocket Eventually, It Is Important, Nevertheless, to Know Where to Charge This Expense

THE tractor dealer is hedged in by practical limitations in his efforts to make his customers satisfied with their tractors. It costs money to render service, and many dealers have found that this expense was making terrific inroads on the profits of their businesses. They have not been able to make the service department stand on its own legs, but there are dealers who have made their service departments profitable, and others who are breaking even.

The three factors which have the greatest effect on the profit and loss sheet of the service department are:

- 1—The selling of the tractor.
- 2—The method of accounting.
- 3—The operation of the service department.

The salesman who sells the tractor can make the life of the service manager a joy or a burden. Too often the salesman is carried away by his enthusiasm and his desire to land the order. He promises that the tractor will do things that it is unreasonable to expect it to do, or he puts the service department in the hole by making promises which it cannot profitably fill. In short, he oversells the capabilities of the tractor, or the function of the service department in his zeal to get the order.

This kind of sale is not profitable, because the service expense is bound to be high. The service department is expected to make good on the promise of the sales department, but it is unreasonable to expect it to produce satisfaction at a profit under the unfavorable conditions resulting from this kind of salesmanship.

Closer cooperation between the sales and service department is required. Most salesmen know what the tractor will do, and they should not be allowed to oversell it. Nor should they be permitted to oversell the service you render. In making a sale, it is just as important to make the buyer understand just what he may expect both as to performance and service, as it is to get his name on the dotted line.

In discussing your service policy, your salesman should be careful to differentiate between free service and that for

Charge Each Department Fairly

HE service department should not be called upon to answer for free service costs which rightfully should be charged to selling expense. Because the service department must perform some work free of charge does not alter the fact that it is part of the selling expense. This article shows how an analysis of your business will help by way of locating faults in your selling methods.

which the farmer will have to pay. The farmer seems to expect more from the tractor dealer in the way of free service than he does from the automobile dealer. The salesman should educate him out of this viewpoint.

Sell the farmer a machine that will do certain definite work, and on which you will render free service only under certain conditions which are definitely understood. This policy will go a long way towards making your service department profitable.

The functions of the service department are twofold. Primarily, it must see that the tractor delivers the results which it was purchased to accomplish. The service department is charged with the job of maintaining the tractors in operating condition. Its secondary function has to do with sales promotion. By making present owners satisfied with their tractor, this department opens the way for a repeat order, and also makes each individual owner a decided asset to the sales department in making sales to other farmers.

This brings up the question of how to charge the cost of rendering service, and this is an accounting problem. Service can be divided into two classes—free service and service that is paid for.

These two can be further classified as follows:

Free Service—(a) Instruction; (b) Repairs and replacements under the guaranty; (c) Policy.

Service to be paid for—(a) Repairs; (b) Replacement parts.

The three forms of free service are really part of the sales expense. The fact that the service department performs the work does not alter the fact that it is part of the selling expense.

Consider instruction. When the farmer buys a tractor, he buys because it will assist him in his farm work. The mere delivery of the tractor does not consummate the deal, because the farmer does not receive all he purchases until he knows how to operate and care for the tractor. This instruction is purchased by the farmer, and the sales department should consequently pay the cost of providing it.

Repair and replacement work under the warranty should also be absorbed by the sales department. The farmer buys a machine that is guaranteed against defects for a certain period. Of course, the cost of the replacement parts can be passed along to the manufacturer, but the labor charge is a selling expense. In a similar manner, service that is rendered free as a matter of policy to create goodwill is also a selling expense.

The cost of maintaining the tractors in the field is properly chargeable to the service department. This work consists of making repairs and replacements resulting from natural wear and tear. For this service the farmer should pay cost plus a reasonable profit, and dealers who are operating their service departments at a profit have found it possible to convince the farmer of the reasonableness of this policy.

What difference does it make whether the cost of service is charged to the sales department or the service department? The dealer has to pay for it, and juggling the figures on the books will not increase the net profits. That is true enough, but each department should be conducted as a business by itself, and each should pay a profit. It isn't fair to service to expect it to shoulder a portion of the selling ex-

pense. If the dealer finds that the profits from his sales department are being eaten up by free service, there is something wrong.

Perhaps he is too liberal with free service, or even the design of the tractor may be unsuited for his locality, or his salesmen may be overselling the capabilities of the machine. Whatever the reason for the high free service cost, it should be investigated from the standpoint of reducing selling expense. If you are selling the right tractor with the right methods, the discounts are long enough to cover the selling expense even when the cost of free service is included.

The last factor is the operation of the service department. Tractor service necessitates an adequate stock of replacement parts, and the tool equipment and mechanics to make the repairs.

The size of the parts stock that should be carried varies somewhat with each individual dealer. Some manufacturers expect their dealers to carry a certain value of parts for each tractor sold. Others do nothing more than encourage their dealers to stock parts. It is agreed, however, that the dealer should be able to supply parts on short notice. The dealer that is a long way from his distributor or branch house must invest

more heavily in parts than the one within a few miles of the wholesaler. Similarly, a dealer who has sold a large number of tractors must invest more heavily in parts than the dealer who has placed but a few.

SERVICE CHARGES DEPEND UPON SHOP EFFICIENCY

The cost of finishing this parts service can be minimized by efficient stock-keeping and storing methods. It is very easy to get too many of one part and not enough of another, unless the stock records provide means for checking the stock quickly. A stockkeeping system that maintains a well-balanced inventory reduces the investment for parts, and increases the efficiency of the service rendered.

The actual work of repairing the tractor is different from that of the automobile. In many instances the tractor is repaired in the field, and for this reason tractor service must be mobile. Dealers who are rendering efficient service find a light truck, equipped to take care of emergency service calls promptly, well worth while.

For overhaul work, and as an operat-

ing base, a shop is necessary. The equipment need not be extensive—a drill press, arbor press, grinder, forge, anvil and an assortment of hand tools cover the important details. Special equipment will reduce labor charges, but the investment required to buy them runs up the overhead expense. Single purpose tools require a volume of work to make them profitable.

The aim of any service organization should be to render service at as low a figure as possible, and in communities where competition for this work is keen, economy is absolutely essential. Accurate records of the cost of doing work are important, because without them it is impossible to make up a proper charge. If your shop methods are efficient, your charges will be reasonable.

These are times when business men of all kinds are finding it necessary to analyze their business in an effort to reduce costs. When you come to consider your service department be sure that you look at it fairly. Don't saddle it with a lot of expense that belongs somewhere else. If you find that your selling expense is excessive, due to the amount of free service you render, the fault lies with your selling methods.

Seattle Dealers' Plan Again Cleans Up Used Car Stocks

THE leading motor car dealers of Seattle are firm believers in the force of collective effort in putting across a big idea in a big way. During the five years the local dealers have been joining hands in staging annual "used car weeks," there has been no greater strength of co-operative effort shown and in the results gained through this co-operative effort than this year, when the used cars were presented to the public in a compelling manner that brought a very liberal number of sales. With the used car stocks materially reduced as the result of the brisk movement of cars during the week, the outlook for spring and summer business in this section has taken on a much brighter hue.

Seattle's used car clearance week has won the distinction of being the Northwest's premier exchanged car event, and in previous years many buyers have been attracted from distant points. As a special inducement to out-of-town buyers to take advantage of the price concessions and the unlimited choice of cars during the sales, the dealers co-operated this year in refunding to buyers of used cars to points within a radius of a hundred miles of Seattle their transportation charges to and from home. Many dealers reported that there was a liberal number of out-of-town buyers who took advantage of this offer. In advertising this feature to the out-of-town prospects, the dealers pointed out that this arrangement would place them on an equal footing with the local buyers, and afford them an unusually wide field from which to make their choice.

While stocks of used cars were virtually exhausted a year ago, there has been a steady accumulation during the winter months, with a result that dealers offered one of the largest stocks of cars ever entered in a used car clearance sale here. Dealers emphasized in advertising the sale that prices on used cars undoubtedly will ascend as the season progresses—an appeal that had a very telling effect upon prospective buyers.

As an additional inducement for exchanged car or truck buyers, some of the dealers announced that they would give free storage on cars purchased during the week, until later in the season, thus eliminating the often troublesome question of finding immediate housing quarters for the car after the purchase is made.

Seattle motor car dealers declare that the idea behind the annual used car week is not different in kind from that which has stimulated some of the coun-

try's greatest merchandising events—such as annual furniture clearances, or semi-annual garment clean-ups. The idea with Seattle motor car dealers was, and still is, this:

That a general clearance sale of used and exchanged cars conducted simultaneously by leading dealers in new and used cars would give the buying public an opportunity to take advantage of clearance prices all along the row and at the same time look over the assembled stocks of many dealers at one time; all having the same purpose—to effect a quick clearance of used car accumulations.

Dealers co-operating in the plan declare this is a sound merchandising idea, which is backed and supported only by dealers with reputations at stake and with cars of determined value to sell.

Strenuous efforts are being put forth by Seattle dealers to elevate the standard of the used car market.

FREE RAILROAD FARE

Dealers co-operating in the Clearance Sale of Used and Exchanged Cars during Used Car Week will refund transportation to all purchasers of used cars living within 100 miles of Seattle.

Used Car Week—March 7 to March 12

Announcements that free railroad fare would be paid to purchasers of used cars living within 100 miles of Seattle were carried in advertisements in the newspapers and in the display windows

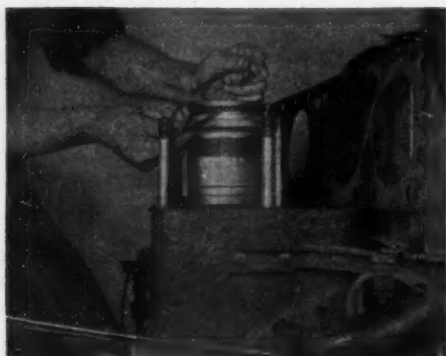
REPLACING PISTON RINGS

*Correct Procedure Outlined for Fitting and Lapping.
The Operations as Depicted Here Are in Accordance
With Good Shop Practice*

IT IS the function of the piston rings to provide a gas tight joint between the cylinder wall and the piston, in order that the pressure developed by the explosion and subsequent expanding of the fuel charge may exert its maximum pressure upon the piston head. A certain clearance must be allowed between the cylinder wall and the piston to permit of the periodic expansion of the parts under the enormous heat developed by burning gases. The piston rings must be so designed and installed as

to take up this clearance space. Their fit and construction must also take into consideration a parallel heat effect. As will be seen later, this is accomplished by clearance in the piston ring joint.

When the piston ring is improperly fit, when the joint of the several rings are not properly placed, or when the ring is broken from any cause, the gases are permitted to leak by the piston, under the pressure of compression or expansion, and the engine fails to develop its full power.



1
Having removed the firing head, the valves were examined and found to be in good condition. This proved that compression was leaking by the piston rings. The inspection plate on the side of the crankcase is now removed and the lower half of the connecting rod bearing taken off. This permits the piston to be pushed up above the cylinder barrel for inspection. This view shows the operator removing the broken ring



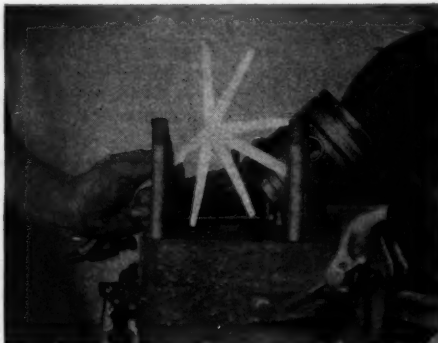
2
The piston and connecting rod assembly is now removed through the top of the cylinder barrel. It is important that every precaution be taken to prevent the adherence of particles of carbon or dirt to the cylinder wall. This view shows the operator washing out the cylinder with kerosene and wiping it with a clean rag



3
It is very important that the ring for the repair should be of the right size. In most instances this may be determined by the size of the piston stamped on the piston head. Ordinarily the manufacturers' standard of sizes may be depended upon. Where practicable, the piston should be calipered to check the ring measurements. This view shows the operator testing the ring size by inserting it in the cylinder barrel



4
After the ring is slipped into the cylinder barrel edgewise, it should be carefully turned into a horizontal position. This will place it in the position that it will occupy in relation to the cylinder wall when it is in its place in the piston groove



5
It will be observed that the joint of the ring shows a perceptible gap. It is very important that this gap should not be too small as it must allow for expansion under the heat developed by the explosion. The gap may be measured by means of a thickness gage, such as is shown in this view



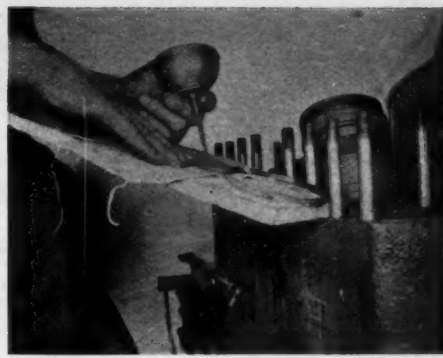
6
In order to measure the gap accurately, a ring should be raised to the top of the cylinder bore to get it in a perfectly level position. To determine the right size of gap, a standard measurement of $\frac{2}{1000}$ per in. of cylinder bore may be used. For example, for a 4 in. cylinder, the ring gap should be $\frac{8}{1000}$. This view shows the operator measuring the gap



7
In this instance the ring was found to be too large, or, in other words, the gap was too small to allow for expansion. This view shows the operator filing out the gap with a pillow file. This tool is one-half inch wide, is smooth on the edges and is not tapered. It is clear that this operation must be done with considerable care and frequent tests made as above described



8
The ring is now fit to the cylinder, but it remains to test its fit in the piston groove. This view shows the operator making this test. It is found that the ring is too wide to allow for vertical expansion in the groove



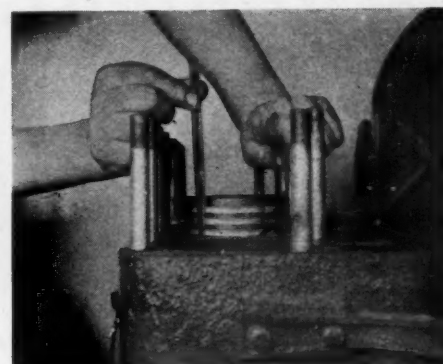
9
When the ring fits too tightly in the groove, it will not be sufficiently flexible to allow proper action as the piston moves up and down in the cylinder. This is a frequent cause of ring breakage. A convenient method of rubbing down the excess thickness of the ring is by using emery cloth and oil on a flat board as indicated in this view



10
This view shows the operator rubbing down the ring. It will be understood that this operation requires unusual care in order that the ring may not be damaged. The board and the emery cloth should be held firmly as indicated and even pressure must be applied to the ring as it is moved back and forth over the emery cloth. This may be accomplished by placing the fingers at diametrically opposite points as shown. Frequent tests of the thickness should be made to see that too much material is not removed



11
The process of fitting the ring to the piston is simple, but must be done with unusual care to prevent breakage. A piece of hacksaw blade ground to a taper and the teeth ground off is a convenient tool in doing this work. One end of the ring is put in place and it is then flexed over the piston head using the thin piece of hacksaw blade to prevent unnecessary expanding. This view shows the operator putting the ring in place



12
The piston and connecting rod may now be reassembled in place. It is clear that some means must be provided for taking up the expansion in the piston rings in order to slip the piston into the cylinder barrel. This is accomplished by using three pieces of hacksaw blades similar to the one described above. They are arranged at equal intervals around the piston and cylinder bore as indicated in the view. As the piston is slipped down the blades are pulled up and the piston slips into place

Asking Car Owners to Send Names of Prospects

With the opening of spring business in the automobile trade in northern California, the Miller Auto Co., Dodge dealer in Sacramento, is at work on the most intensive campaign for selling its line.

A letter campaign to Dodge owners was the first step adopted by Royal Miller, president of the company. Every Dodge owner in northern California was asked to send in a list of five prospects for Dodge cars. The person who sends in a list will get \$10 for each car sold to his "prospects." The response has been general and helpful for those who send in names are anxious to send real prospects, so they may get as many \$10 bills as they can.

Another idea Mr. Miller has put into effect is the tipping over of a Dodge car in the show window of the sales room, showing the under side of the automobile. The various parts are tagged or

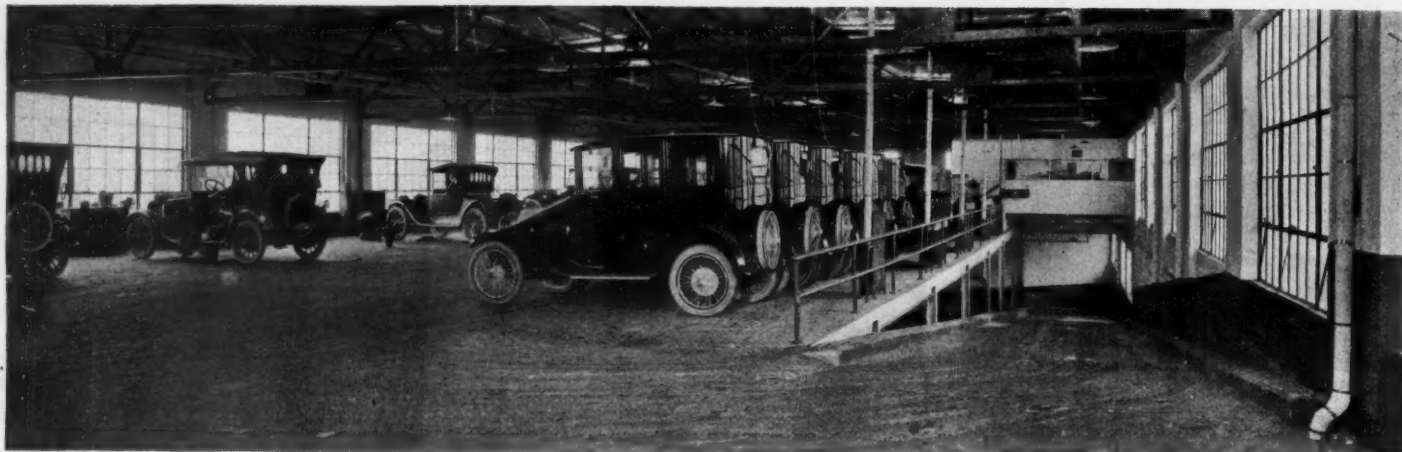
otherwise marked, and the motorists whose ideas of their cars are vague, find the plan a real help in understanding them. If they wish to learn more, an attendant inside who knows automobiles is waiting to tell them.

Sells a Tire—"Pay When You Use it."

A dealer who had been losing many tire sales because his customers did not carry a spare and often needed a tire when in some other territory, worked out a plan that soon reduced his stock and netted him considerable business. He sold them the tire but did not ask them to pay until they had had occasion to use it. As he only made sales in this manner when the users' tires were well along in their journey he did not have to wait long for the money and made a number of sales which he would have lost under other circumstances.

Go After New Business Every Day

The most successful automobile man is the one who keeps right after the business day in and day out. Being aggressive is one of the secrets of success in this line. And, in order to see to it that he is aggressive in going after new business, the automobile man should check up on himself every day. He should make a note every day of the new business he has gone after on that day, as there is nothing like getting things down in black and white in order to see what has actually been accomplished. If a man will do this and be honest with himself he will be astonished to see how much time, in many instances, he has wasted in looking after old business which could have been delegated to employees and in not going after the new business which means growth and prosperity. Go after some new business every day, every week!



A part of the shop on the second floor of the Black & Maffett's new service station in Atlanta. The concrete incline at the right is an unusual feature not found in the average automotive building. The entire building is a model of efficiency throughout, and represents an investment of about \$300,000.

Automotive Building Active In South

Shows Faith in Future of Industry by Constructing Many New Service Stations and Salesrooms. Black & Maffett, Atlanta, Erect \$300,000 Establishment With Many New Features

WHILE the recent period of depression all lines of business have experienced throughout the country has been more or less of a hardship, dealers and distributors of the south are expressing their absolute confidence in the future of the automotive industry through the investment of many millions of dollars in new construction work. Mainly these new buildings are service stations and automobile sales plants, and it is generally believed that more construction of this nature has been done in the south the past six months than at any similar period of time in the history of the industry.

In Atlanta, Ga., alone more than \$2,000,000 has been invested the past few months in new buildings by dealers and distributors; some of these have been completed and others are now in the course of construction. This certainly indicates that the dealers are absolutely confident as to the future, regardless of the fact that the business has lately experienced a period of depression and sales have been few and far between.

One of the finest and best equipped service stations to be recently constructed in Atlanta, and one that incorporates a number of interesting and unusual features, is that of Black & Maffett, one of the largest and best stations to be found anywhere in the south. It represents an investment of about \$300,000.

The first floor of the new service station is divided off, providing space for seven cars and which is termed by Jesse M. Boehler, service manager, as the

"courtesy floor." Every car which enters the door must drive by the service manager's office, and it is met personally either by Mr. Boehler or his assistant, R. M. Tuck. Each case is carefully diagnosed in this department. If only minor adjustments or repairs are needed the customer may wait for the car while the work is done in the quick service department.

One of the unusual features in this department is a small waiting room encased in glass, where customers may go and wait for their cars if they so desire. This waiting room is provided with cushioned chairs and settees, a reading and writing table, and late magazines and books are kept on this table at all times for the benefit of the waiting customer.

The room is heated by steam pipes and is much warmer than the service station itself. A line of accessories in most common use are displayed in showcases near the waiting room, which is just inside the entrance to the station. Sales over this counter are frequent enough that the additional income derived helps meet the overhead expenses.

Instead of an elevator a concrete incline was constructed leading to the shops on the second floor, and cars are driven up under their own power.

Parts and accessories are carried in a special department on the main or second floor. A four months' supply is carried at all times, valued at between \$60,000 and \$70,000. A perpetual inventory system is used.

Catering to Women Through Their Clubs

WHEN the women of a city are interested in any kind of a merchandising establishment the success of that establishment is pretty well assured. Automobile dealers who are seeking to interest the women of their city should not overlook the local club women. Generally speaking, the club women of a city represent the best class of women—intellectually and financially. So if the dealer could secure their enthusiastic interest he would be sure of getting a lot of business through the influence they exert over the family purchases.

One of the best ways of arousing their interest would be by securing the annual programs of the local women's clubs—

which always contain the names and addresses of members—and then sending personal letters to the members stating that the dealer is catering especially to women and that he has arranged a particularly attractive salesroom for their benefit and asking them to come and see it. It might also be a good policy to offer the free services of cars to certain clubs on the occasion of their anniversary meetings or similar unusual events. By doing this the dealer would be securing a lot of valuable publicity and also putting the women under obligations to him, which would probably result in the women doing everything possible to send business to him.

SAVES TIME CLEANING CARS

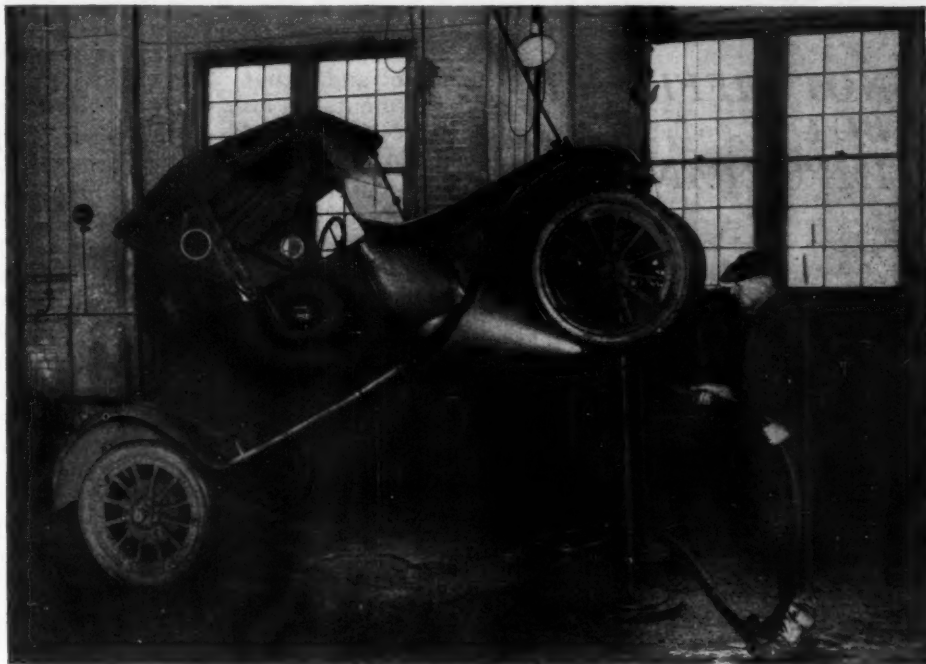
Compressed Air and Water Apparatus Devised by Dealer Does Quick and Thorough Work

CLEANING cars with air and water with apparatus which has been tried out by the Tate Motor Car Co., St. Louis, Mo., has proved highly successful. The cleaning of cars by the old hand method involves much time and the cleaning is not thoroughly done. In the case of drive-away cars that have been driven over country roads, under bad weather and road conditions, it requires two or three days to clean the cars so they are fit to deliver to the customers.

Mr. Frank R. Tate, president of the above organization, conceived the idea of using compressed air and water, not only for cleaning the cars but the greasy parts as well.

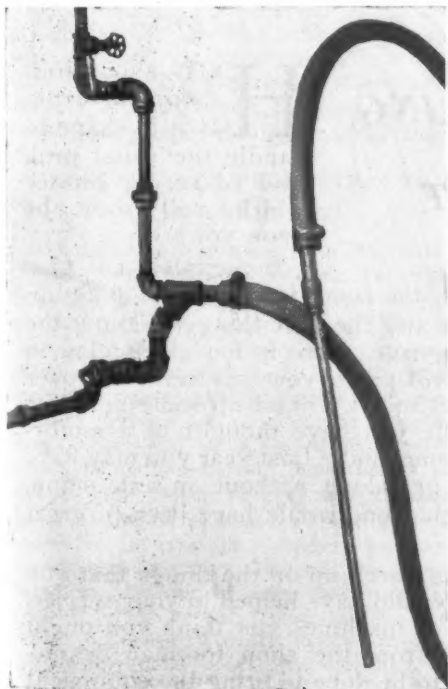
The original equipment used comprised a small air compressor that was capable of delivering about 100 pound pressure and water connections that were made from the city main. The results obtained were very good and the only drawback was the fact that only a small number of cars could be washed and it took a long time to thoroughly clean a car.

Because of the fact that the first layout proved so satisfactory, Mr. Tate decided it would be worth while to install larger equipment that would permit washing a large number of cars in a short period of time and, at the same time, the compressor could furnish air for their body



Cleans Mud and Grease from Running Gear

Above is shown the application of the air and water spraying apparatus worked out by the Tate Motor Car Co., St. Louis. One of the precautions to be taken is to see that the water pressure is not too high as it knocks the paint off. Experiment will determine the proper pressure



Showing how connections are made to regulate the compressed air and water. Air pressure is 100 lbs. with usual city water pressure

department. The Semi-Diesel type of engine driving a 30 hp. Curtis air compressor was installed. The engine was purchased for \$2450 and it was estimated that it would be a much better paying proposition to buy this machine and run it 24 hours in the day than to pay for an electric motor and its upkeep. The waste oils such as old crankcase oils—kerosene—gasoline and all of the oils accumulating in their service station are used for fuel. This means that the operating cost of the engine is virtually nothing.

Connections were then made, as shown in the illustration, which makes it possible to get a perfect regulation of air and water. To insure getting a better cleaning job, and make it easier for the man who is doing the washing, an air hoist has been installed which can be connected by chain to the front axle and the car lifted up, as shown in the illustration.

The air and water is propelled through a $\frac{3}{8}$ in. nozzle, 3 ft. in length. Successful results were obtained with a combination of 100 pound air pressure and the normal city water pressure.

After the dirt and grease has been removed the car is dried with air. This eliminates the use of chamois skins and the air drying will not leave a scratch

or blemish of any kind on the surface of the body. The old system of cleaning an engine was to use a combination of air and gasoline or kerosene. With a proper adjustment of the air and water, it has been possible to clean an engine thoroughly in five minutes.

Saves Floor Space

There are several precautions that must be taken. If only a little air is used with high water pressure, it knocks the paint off. Therefore, it may require some experiment to determine the exact pressure to be used for certain kinds of work. This system, however, has several advantages. If a service station has forty or fifty cleaning jobs a month, it not only saves time and labor but there is a vast amount of floor space saved as well. Deliveries can be made quicker and much better jobs turned out.

In connection with the cleaning process, this company has advertised a flat rate sum of \$30 for polishing the body and painting the frame, engine and all of the chassis parts.

Customers have been very much interested in keeping up the appearance of their cars and by spending this small amount once or twice a year it is possible to keep a car looking practically as good as new.



EDITORIAL



NOT DIFFICULT, BUT IMPORTANT

IN the handling of service and other departments of an automotive business at a profit there are certain steps that are highly important for proper results, and many of these steps are not as difficult as they are often supposed to be. Take for example the matter of costs on detailed jobs. There is a popular conception that the keeping of cost figures necessitates a large force of bookkeepers and that the results are often out of all proportion to the expense of the work.

Yet brief attention to the subject discloses that many very valuable cost figures can be obtained at very little effort more than is today expended in keeping the firm's books. One of the major imperfections in many systems today is that most valuable figures are secured through the operation of the forms and records in use but the figures are not so manipulated at the finish that they furnish a maximum of records.

Practically every shop worthy of the name has time cards, job cards and other forms. These furnish the basis for very-interesting computations. As at present handled, they may show the proprietor how much in a lump sum his shop has made or lost in a month. He has not, however, considered it possible to ascertain the actual labor cost and profit or loss per hour because, as previously stated, it looks like a formidable and expensive task. But is it?

The records of nearly every shop will disclose the number of hours of labor performed each month if a little search is made for this figure, and it isn't much of a step to divide this into paid labor and unpaid labor hours. Neither is it difficult to determine the total cost of wages in the shop, and the fixing of the overhead, including the unpaid labor, is also not a big task. Now—with the total number of hours and the total cost of the shop per month in wages and overhead, dividing total cost by the total hours sold gives a cost per hour, and if this should prove to be eighty cents and the selling price of labor seventy-five cents the result is obvious.

There are many matters of figures that can be figured out by an interested proprietor in his leisure hours and the computation is most interesting work.

WHICH ONE IS PAYING YOUR TAX?

show, not for the government's satisfaction but for the satisfaction of the proprietor, how the tax was apportioned among the various departments?

THE income tax is paid, or at least is supposed to be. In estimating the income tax for last year, was it possible with the set of books kept in each dealer's establishment to

If a tax must be paid by an establishment why not know which departments are paying the tax and which ones are the burdens?

The service department is one of the most difficult to account for. The idle time of the men and the overhead expense are the two items that are the most difficult to keep an accurate account of. These are the two factors that are eating up the profits of many a service department. Peak load periods are responsible for one evil, and ignorance of the fixed operating expenses contributes to the other evil.

The inducements which will bring people into the shop during times that are slack are easily furnished through a fixed charge service system, which is another story in itself, but it is established that people will buy service at any time when they know what the charges will be.

In our issue this week we deal at length with a service system worked out on a flat-rate basis. Shown there is a small pamphlet that was sent out to the customers of the concern and the results were sufficient to bring in enough service work during a slack period to load up the shop for three weeks' time.

The fixed-charge service system is one answer to the problem of idle time, and as every service manager knows that is one of his important problems. There may be other ways to solve this part of the shop expense problem, but it is admitted by those who tried this one way that it pays.



OVERHAULING YOUR EQUIPMENT

HOW about your shop equipment? Is it in shape to handle the usual peak load of spring service which will soon be upon you?

Sometimes in the rush of service work the condition of the shop equipment is passed over and the first thing we know the lathe is not running true, there is too much play in the spindle of the drill press, you may want to cover the bench with sheet metal, or put up some new line shafting. Or, maybe you have thought of a motor-driven machine of some kind. Last year you may have thought you could get along without an axle stand, but later on found that one would have been of great help.

Now is the time to check up on the things that you found out last year would have helped in your service. Jot down the tools or machines you think you ought to have. Find out from the shop foreman or mechanics what ought to be done to bring the equipment up-to-the minute. The rendering of good service depends as much on the condition of the service machinery as it does on the willingness of the institution to render good service.

More Cars Built in February

Detroit Production Figures Show Increase of 3,425 Over January After Eliminating Ford Output of 35,000 for Month — Encouraging Reports Come From Manufacturers

DETROIT, March 10—Production figures for the Detroit territory in February are indicative of the predicted steady and healthy increase in the industry, the total of 53,040 cars produced in February being an increase of 38,425 over the January total. This, however, includes the 35,000 cars built by Ford in February in the Highland Park plant and the branches which, if eliminated, would leave an increase of 3,425 cars manufactured in the 31 plants in Detroit and Michigan over January figures. While 30,000 cars were assembled in the Ford branches outside of Detroit in January, the figures were not included in production totals for the reason that the Highland Park factory was closed, and it is hardly fair to compare February with January totals and include the Ford February output.

The evident upward trend bears out the statements of factory executives and dealers who came back from the New York and Chicago shows confident that the improvement would be steady. All of the factories are increasing production this month, and schedules for April indicate that the output will reach close to normal by midsummer. There are some dissenting opinions, however, and these include leading manufacturers, who contend that it will be a year before the industry will get anywhere near normal as construed in comparison with production during the first half of 1920.

EXPECT MARCH PRODUCTION TO LEAD FEBRUARY

The increase was general in February, though more marked in some factories than others, and in two or three of the largest decreases were shown. These, however, were due to various causes, chiefly lack of materials, disintegrated working organizations caused by employees having left during the depression period and unbalanced inventories which compelled certain departments to remain idle, while others were moving along at the usual speed. There was no recession in sales in February as compared with January, but on the other hand the feeling of optimism was increased and actual retail sales and dealer orders give every indication that the improvement noted will continue.

March production will be considerably ahead of February in the opinion of practically all manufacturers, and in most instances definite schedules have been outlined for the month. Studebaker

By R. H. Burlingame

Of the Detroit office of the Class Journal Co.

plants which were building 525 cars in both Detroit and South Bend factories during the latter weeks in February, jumped to 665 weekly in Detroit and 475 in South Bend. The Studebaker officials said they had increased the working time to five days rather than increasing the number of men employed. The plant prior to March 1 had been working four days a week. A schedule of a 5½ hour day will be entered upon April 1.

Paige production, which was maintained at about 60 per cent of normal during February, now is on a 75 per cent basis, which means an output of about 72 cars a day. Paige output is being increased steadily, however, according to President H. M. Jewett, in compliance with an unusual sales demand, and he predicted a record production by April 1. Mr. Jewett said he expected the company to reach normal production, ranging around 90 cars daily, in a few days.

Encouraging reports come from the Packard Motor Car Co., which is adding to its working force each day. The company produced about 30 per cent of normal during February and is increasing its output each week. Vice-President Roberts said some activity is being noted in the truck end and he looks for increased demand for trucks, with a consequent production increase by April 1 that will mean the beginning of a sharp upward trend in truck manufacturing and sales that will continue throughout the summer. With its full force of approximately 5,200 men working, Reo Motor Car Co. at Lansing is working about 4,000 on a full time schedule and 1,000 on half time and has been since Feb. 7. Previous to that the entire force worked half time.

About 2,100 cars and speedwagons were built by Reo during February at a ratio of three speedwagons to one passenger car. The company now is producing about 75 per cent of its normal output of approximately 120 daily.

The Dodge plant still is down and officials will make no announcement as to plans for reopening.

Officials of the Hupp Motor Car Corp. report steady improvement, though President Hastings declared the company would operate on a conservative basis

and would not be swayed by the optimistic reports. Hupp officials do not look for more than 50 per cent of the volume of 1920 business during the present year, and will schedule production from month to month in accordance with that belief unless a sales demand forces a greater increase. Hupp will build 1,000 cars this month.

Buick Motor Co. is working 65 per cent of its force full time and built about 200 cars a day in February. Buick officials report actual retail sales in January amounting to 1,700 cars and 2,900 in February, with every indication that the March retail sales will double that amount.

Olds Motor Works at Lansing built about 60 cars daily in February and this week jumped to 90. The latter figure is about 60 per cent of Olds normal output. The plant turned out 80 small and 20 large cars yesterday.

Dort officials report many prospects and improved actual demand, but are manufacturing conservatively and production will be increased slowly and distinctively in accordance with sales demand. Dort built 700 cars in February.

Chevrolet is working the full force, but on part time.

Hudson-Essex had not increased production materially in the last month, though officials report the dealers are optimistic and plans for a step-up in production schedules now are being outlined.

WILLS-LEE PRODUCING ON DEFINITE SCHEDULE

Columbia Motor Co. started this week on a regular production schedule, after having been closed down for some time. Officials would not say what output was anticipated for March.

Lincoln Motor Co. has scheduled 250 for March and 400 for April. The company built around 100 cars in February.

The Saxon plant during February operated on a schedule of about five cars a day Liberty produced about 30 per cent of normal.

Cadillac has been operating on a basis of 40 per cent since Feb. 1, but reports from dealers and distributors, officials say, assure an increase in output during March and a steady upward trend thereafter. The new Wills-Lee plant swung into production on Feb. 10, and is now turning out cars every day, though on a limited schedule.

Klingensmith Joins Beall to Make \$1,500 "Gray" Car

**Gray Motor Corp. Will Produce
Four-Cylinder Automobile
Late in Summer**

DETROIT, March 9—Announcement by F. L. Klingensmith, former general manager of the Ford Motor Co., that he had associated himself with F. F. Beall, former vice-president in charge of manufacturing of the Packard Motor Car Co., in the Gray Motor Corp., formed to take over the Gray Motor Co., has set at rest rumors current throughout the industry regarding Klingensmith's future plans. The new company will make a four-cylinder car to sell at around \$1500, which will be in production in the late summer. W. A. Blackburn, former factory manager of the Cadillac Motor Car Co., will be factory manager of the new corporation.

The corporation immediately will begin construction of additions and extension to the present plant of the Gray Motor Co. at Mack Avenue and Terminal Railroad, where engines and parts will be manufactured and distributed to ten assembly branches scattered throughout the country. In shipping the cars from Detroit unassembled, thereby reducing sales expense and freight, the concern hopes to be able to sell the new product at the same price in all cities. A similar arrangement will be carried out in the marketing of cars in the foreign field.

Tested Since Last September

The new car, which will be known as the Gray, will be of simple design and economical in operation, according to Mr. Klingensmith, who declared that sample engines which have been running since last September have shown a great gas economy, operating as high as 27 miles to the gallon. It will have a 112 in. wheelbase, 3½ by 5 four-cylinder overhead valve engine of high grade, and will be equipped with a body of exceptional beauty of design and good workmanship.

The corporation is well equipped for manufacturing in large quantities, and will build engines for commercial use in addition to those required on the company cars. The present company has been building and successfully marketing engines for several years. Beall left Packard to join the Gray organization last summer, since which time he has been engaged in the development of the engine for use in a proposed new car. The resignation of Klingensmith furnished opportunity for an ideal combination of Beall's long and successful production experience with Klingensmith's experience in the financial and selling end. The latter brings to the organization the moral support and financial backing of men prominent in the banking world, and the success of the concern and its development into one of the leading industries in Detroit appears assured.

At a meeting of directors of the Gray Motor Corp. this week, Klingensmith was elected president, Beall vice-president and general manager, G. H. Kirchner, president First State Bank, Detroit, treasurer, and J. B. Moran, secretary and assistant treasurer. Klingensmith, who was with the Ford company for fifteen years, resigned January 1. He served during the last six years as vice-president and treasurer of the Ford organization, and during that period had charge of all the Ford financing.

Industry Represented on St. Louis Police

ST. LOUIS, March 11—The automobile industry is well represented in the recent appointment of members of the local Board of Police Commissioners.

Governor Hyde, who made the appointments, was an automobile dealer; Stewart McDonald, an appointee, is an automobile manufacturer, and Philip H. Brockman, another member of the board, is a dealer and president of the St. Louis Automobile Dealers' and Manufacturers' Association. Victor J. Miller, chairman of the new board, is an attorney for the Southern Surety Co., which writes extensive insurance against automobile accidents.

Rubber Association Taking Up Standardization of Tires

New York, March 10—The executive committee of the Rubber Assn. is giving careful consideration to the subject of the support to be given various good-roads organizations and it is hoped some program can be worked out upon which the entire automotive industry can unite. Another phase of this work is connected with the efforts of the motor vehicle conference committee to have enacted a uniform state legislation in relation to load schedules, tire carrying capacity, etc.

The Rubber Assn. also has taken up the question of standardization in the sizes of automobile tires and its research in this direction has emphasized the need for a technical committee which is to have as its primary purpose, the consideration of tire standardization. As a preliminary step in this direction, a committee of five members of the executive committee has been appointed to comprise a technical committee which will consider all standardization projects.

SARLES LATEST RACE ENTRY

Indianapolis, March 11—Roscoe Sarles has entered the international 500-mile sweepstakes race to be held at the Indianapolis Motor Speedway, May 30. He will pilot a Duesenberg.

Canadian Executive Declines to Join Ford's American Staff

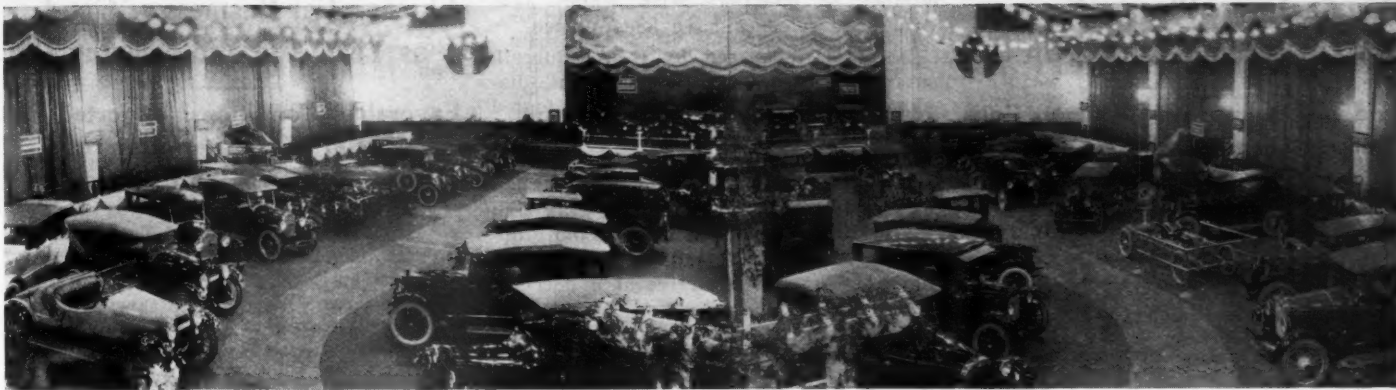
**W. R. Campbell Reluctant to Leave
Present Post to Become
General Manager**

DETROIT, March 10—Considerable interest has been aroused in the future of the Ford organization by the fact that W. R. Campbell of the Ford Motor Co. of Canada finally and definitely has refused to become associated with the American organization. Campbell was sent for by Henry Ford soon after the resignation of F. L. Klingensmith as general manager, and it is said Mr. Ford offered him the position vacated by Mr. Klingensmith. Campbell was reluctant to leave his Canadian post, but Mr. Ford urged him so strongly that Campbell remained at the Highland Park plant from the time of the reopening until last week virtually in charge of the organization there.

It was unofficially stated at Highland Park three weeks ago that Campbell had finally declined to become general manager, but would accept the office of treasurer. In fact, Campbell himself admitted he had finally refused to become general manager and virtually admitted he would accept the treasurership.

What developed to cause Campbell to change his mind is not known. Close friends quote him as saying he had seen too many bigger and better men than himself summarily dismissed or forced to resign for disagreement on company policy and did not "intend to go along with the procession." Campbell would make no statement other than confirmation of his refusal.

At present Mr. Ford himself is said to be in active charge at Highland Park as well as the River Rouge plant, where tractor production was started two weeks ago. C. E. Sorenson, who has held the title of general manager of Henry Ford & Son, divides his time between River Rouge and Highland Park, and virtually is looked upon as general manager of Ford properties and the man next in authority to Henry Ford and his son Edsel. The latter, who is president of the Ford Motor Co., is in active charge at Highland Park. Since the resignation of W. G. Knudsen, E. C. Kanzler has been in charge of production at Highland Park. However, the title of production manager has not been conferred on Kanzler, and Mr. Ford recently intimated it was his intention to eliminate titles and co-ordinate the work of the various departments with direct control of the big organization centered in the group of executives headed by himself and including Edsel, Sorenson, E. G. Liebolt, Ford's private secretary; W. A. Ryan, general manager; B. J. Craig, secretary; Fred Diehl, purchasing agent, and Kanzler. No name has been sent to the banks in Detroit by the Ford Motor Co. as the official signature on Ford checks to take the place of Klingensmith, and no one will offer any information as to the probable selection as treasurer.



Merchandising Feature In Show Decorations

While the auditorium where the Great Southern Automobile Show was held was tastefully decorated it was a noticeable fact that the decorating was not overdone. In other words, it was not so elaborate that the beauty of this arrangement would leave the primary impression on the visitors' mind after they had left the show. Virgil Sheppard, general manager, followed the same principle in this regard as is followed by experts in the dressing and trimming of window displays. The idea is that the decorations must not be so elaborate that the merchandise on display becomes a secondary consideration. The average visitor at the Atlanta show might comment upon the general beauty and attractiveness of the decorations, but the strongest impression left with the visitor was of the displays in the various exhibits.

Blow Dealt Buyers' Strike By Southern Automobile Show

Confidence Restored in Small Town Dealers Through Seeing Atti- tude of Buying Public

ATLANTA, Ga., March 12—A blow has been dealt the "Buyers' Strike" by the Great Southern Automobile Show. Months of individual effort on the part of the automotive dealers in this section to force business to return undoubtedly accomplished a great deal toward the betterment of conditions, but it took the show only a single week to bring the buying public back to a condition that is more nearly normal than it has been in this part of the country for a good many months.

Promotion of the event which had been in progress for many weeks before the show accounts for the widespread interest that the whole Southeast displayed.

Paid advertisements were published of ten-inch depth and three-column width in more than 100 newspapers of Georgia, Alabama, Tennessee, South Carolina, North Carolina and Florida. This copy was placed direct through the various dealers throughout the territory, which gained for the show hundreds of columns of free publicity that would not otherwise have been possible. These news stories were distributed to the dealers by the various Atlanta distributors, and turned in by them to their local newspapers where, of course, the dealers had a personal acquaintance. This resulted in hundreds of these news stories about the Atlanta show finding their way into print, and thousands of dollars' worth of free publicity was thus obtained by the show committee.

In conjunction with the show the Atlanta Merchants & Manufacturers' Association held a "Merchants' Week." This was in the nature of a spring style festival.

To insure a wide attendance of deal-

ers from over the territory, numerous of the Atlanta distributors arranged special meetings during show week, urgently requesting their dealers to attend these meetings. This served to bring hundreds of outside dealers to the city during the week, many of whom doubtless would not have come but for the special dealer meetings that had been arranged. It was not merely that the dealers visited the Atlanta show that accomplished the real results in this regard, but that they were thus afforded an opportunity to see the great interest the general public took in the event and their own view of the future took a decided turn for the better as a result.

Another event that brought several hundred dealers at Atlanta for the show was a special state meeting of the Georgia Automotive Dealers' Association, held Thursday, March 10. The members of this association, which is one of the strongest dealer organizations of its kind in the country, visited the show in a body. And again the small town dealer was afforded an opportunity of seeing with his own eyes that conditions were not nearly so bad as his state of mind had pictured.

Friday and Saturday, March 11 and 12, the Southeastern Automotive Equipment Jobbers' Association held its annual meeting in Atlanta in connection with the show. This brought to the city every automotive equipment jobber in the Southeast of any consequence, as well as numerous factory representatives from the North and East.

DURANT TO OPERATE IN AUGUST

Detroit, March 11—Stock of the Durant Motors, Inc., is being offered in Detroit by New York brokers at \$20 a share when, as and if issued. In the announcement it is stated that Durant Motors, Inc., will be in operation Aug. 1 with the Durant car which will sell in the neighborhood of \$1,000. It also is announced that no stock will be issued to W. C. Durant for his experience in organizing the concern nor for patents or good will.

Seized Car May Be Forfeited But Owner Not Made to Suffer

Connecticut Judge Decides in Case of Automobile Taken for Transporting Liquor

HARTFORD, Conn., March 9—A decision of importance to the whole country was given yesterday by Judge Thomas in the United States District Court at New Haven in the case of a motor car which had been seized because of unlawful transportation of liquor. Decision was for the Government, to the effect that a car sold under a conditional bill of sale may be forfeited but that the wrongdoer alone suffers. As soon as the wrongdoer is convicted the Government files a motion that the vehicle be confiscated and sold. Within 60 days after the conviction of the accused the person claiming ownership or a lien on the car must file with the clerk of the United States Court a petition in reclamation asking for the return of the car, or, if that is not granted, must pray that the court recognize his right to a lien on the car in the amount due him.

This petition should be accompanied by all evidence which the petitioner has concerning the title and the lack of knowledge or consent to this illegal transportation. The Government will file an answer and then the matter will come up before the court. If the judge finds the affidavits and the evidence satisfactory, he will decide forthwith. Otherwise he will assign a hearing for further evidence.

Although similar cases have arisen in New York, Massachusetts and Pennsylvania there has been no decision until now. This special case was in re George H. Cohen of Hartford, special assistant to the U. S. Attorney for the Government, against William A. Wright of New Haven for the Commercial Investment Trust reclaiming petitioner.

Manufacturers Placing New Orders and Taking Up Old

Evidence of Improved Business Conditions Given at Motor and Accessory Association Meeting

NEW YORK, March 11—Indisputable evidence of improvement in business conditions was given at meetings of groups A and B of the credit department of the Motor & Accessory Manufacturers' Association held on the same day at Cleveland and New York. Upon request from headquarters, members attending were prepared to give information regarding the placing of new orders, release of shipments on old orders, collections as compared with the previous month and production of cars. It was disclosed at the two meetings that the following manufacturers have placed orders for new material in varying quantities:

O. Armleder Co.
Briscoe Motor Corp.
Jas. Cunningham Son & Co.
Dort Motor Car Co.
Elgin Motor Car Co.
Ford Motor Co.
Franklin Mfg. Co., H. H.
Gardner Motor Car Co.
General Motors Corp.
Buick Div.
Cadillac Div.
Sheridan Motor Car Co.
Gramm Bernstein Motor Truck Co.
H. C. S. Motor Car Co.
Haynes Auto Co.
Hendee Mfg. Co.
Hupp Motor Car Corp.
International Motor Co., Inc.
Lincoln Motor Co.
Locomobile Co.
Maxwell Motor Co.
Moon Motor Car Co.
Nelson Motor Car Co.
Reo Motor Car Co.
Studebaker Corp.
Stutz Motor Car Co.
Yellow Cab Mfg. Co.

Releases of shipments on old orders are reported as being received by members from the following:

Acme Motor Truck Co.
Auburn Auto Co.
Autocar Co.
Briscoe Motor Corp.
J. I. Case Threshing Machine Co.
Chandler Motor Car Co.
Chevrolet Motor Co.
Cleveland Automobile Co.
Commercial Truck Co. of America
Day-Elder Motors Corp.
Diamond T Motor Car Co.
Dodge Bros., Inc.
Ford Motor Co.
Franklin Mfg. Co., H. H.
General Motors Corp.
Buick Div.
Cadillac Div.
Oakland Div.
Olds Div.
Graham Bros.
Grant Motor Car Corp.
Hudson Motor Car Co.
Hupp Motor Car Corp.
Liberty Motor Car Co.
Lincoln Motor Co.
Mercer Motors Co.
Moon Motor Car Co.
Nash Motors Co.
National Motor Car & Vehicle Co.
Northway Motors Corp.
Packard Motor Car Co.
Pierce-Arrow Motor Car Co.
Reo Motor Car Co.
Standard Steel Car Co.
Stevens-Duryea, Inc.
Studebaker Corp.
Templar Motors Co.
Walker Vehicle Co.
Ward Motor Vehicle Co.
White Co.
C. H. Wills & Co.
Yellow Cab Mfg. Co.

The quantities reported in both instances vary quite materially, as do the

number of members with whom new orders or releases have been placed.

A report prepared by C. A. Burrell, manager of the credit department, disclosing the results of the consolidated information, says:

"Members of the groups generally report a better condition of affairs than existed before the first of the year, and the prevailing tone seems to be more optimistic. Reports made by those who have endeavored to arrive at a percentage seem to indicate that business is ranging about 20 per cent to 33 1-3 per cent of what might be considered normal, though the latter figure is probably somewhat high."

N. A. C. C. Votes \$5,000 in Prizes for Essays on Safety

New York, March 10—The National Automobile Chamber of Commerce has voted \$5,000 in prizes for essays on safety by school children as part of a campaign to educate the careless motorist.

Interest on the part of the school children is calculated to impress the subject of automobile safety on their elders and to bring up the younger generation with consideration for human life.

The members of the chamber will work through recognized official safety and playground agencies, so that the benefit of the best experience may make the prizes most effective.

Government Authority First Before Mail Can Be Carried

Washington, March 9 — Automobile manufacturers and dealers staging speed contests in the transportation of mails will not be permitted to carry postal matter without advance authority in each case from the postoffice department. An order was issued here today by Otto Praeger, second assistant postmaster general, advising postmasters throughout the country that no dispatches of mail matter for tests or experimental purposes involving automobiles, airplanes or other vehicles will be permitted without special authority.

Complaints have been made to the postmaster general that persons representing themselves to employees of the postal service have applied to postmasters for mail matter to be dispatched on certain test trips of automobiles and also for mail equipment to be used for the same purpose.

DEAN MARQUIS WITH WILLS?

Detroit, March 10—Reports persist that Dean S. S. Marquis, formerly head of the Welfare Bureau of the Ford Motor Company, will join the C. H. Wills organization in charge of welfare work. Dean Marquis is out of the city and will not return until next week. Officials of the C. H. Wills Co. refuse to confirm or deny the report, but those close to Dean Marquis, as well as Mr. Wills and Mr. Lee, express confidence that Dean Marquis will join the organization in a very short time.

Chicago Car Business as Good as Year Ago and Keeping Up

Favorable Conditions Reported in Used Car Market—No Improvement Shown With Trucks

CHICAGO, March 11—The number of actual deliveries of new cars sold at retail during the first two months of this year was equal to that for the same period a year ago and there appears to be no let-up in the demand that is being made for new cars by city buyers. The same condition does not hold good in the wholesale trade—cars sold by the distributors to their country dealers. There is very little trade in the country and as little hope of improvement until the farmers get to work, release their crops, either warehoused or represented in hogs and cattle, and forget the past. There is a feeling in some quarters that there will be no really marked improvement in country trade until along in the summer.

Must Go After Buyers

But trade in the city is so good that dealers are asking if it is going to last—whether it does not constitute in a measure the business left over when the slump came last August. There were many prospects at that time in the mood for buying who were frightened off by general conditions and who, with the cut in Ford prices the following month, felt that they might as well wait a while longer to see how far prices would be cut.

Business began to pick up in January; then came the show and trade showed further advances and has been advancing ever since. The show opened up the "new era." It furnished prospects—and these prospects furnished other prospects—on which sales forces have been working ever since. Working conditions among the distributors are directly reversed from what they were a year ago. In 1920 there were plenty of buyers without being sought and there was with most of the distributors difficulty in obtaining cars, so that many of the buyers purchased cars which they did not set out to buy rather than wait until the car of their choosing was available. This year every distributor has enough cars or can get them without waiting to fill every order, but he has to go and get the buyers; they are not coming to him as they did a year ago.

All this makes the distributor feel better—it makes him feel that the industry is becoming more stabilized and as it should be.

The used car market is good, probably as good as it was in the first two months of last year.

The truck market is not good. Chicago profited slightly from the good roads show, but until conditions throughout the city show a more appreciable improvement truck distributors do not see that there will be any forward movement in their lines.

Motor Vehicle Legislation Is Finished by Pocket Veto

Bill Approved Authorizing War Department to Transfer 1,250 Tractors for Road Work

WASHINGTON, March 11—President Wilson's pocket veto of the Army appropriation bill put an end to all legislation designed to sell or transfer surplus army trucks and automobiles. The Senate and House had passed the bill as received from conference in which the House conferees had prevailed upon the Senate managers to an amendment requiring the sale of not less than one-half the surplus trucks and cars.

The conferees could not agree as to appropriations for the Air Service which the Senate insisted should be adequate. The Senate failed to reach a vote on the Naval appropriation bills and as a result the item for purchase of aircraft equipment will be carried over into the extraordinary session. The Senate amendments concerning the disposition of tractors as carried in the Fortifications bill were accepted by the House and the measure received the approval of the President before his retirement from office. Under the terms of this bill, the War Department is authorized and directed to transfer 1,250 tractors to the Bureau of Good Roads for distribution to the states for use on highways. Senate leaders and War Department officials predicted that the transfer will put the Army on the market for new tractors within a year.

The adjournment of the Sixty-sixth Congress left many pressing bills on the calendar for reintroduction at the present session. One of the notable features of the past session was the failure of the Senate to approve the continuation of the Federal aid appropriations. At the time of the rejection of state-aid program, it was indicated that the plan of national highways indorsed by the automotive industry would be given consideration at this session.

Modern American Racing Team First Time in European Test

BY W. F. BRADLEY

European Correspondent of Motor Age

Paris, Feb. 28—By reason of the formal entry today of a team of four Duesenberg cars in the French Grand Prix race, on July 25, immense additional interest is given to the French chassis. Two of the Duesenbergs will be in the hands of American drivers and two in the hands of Frenchmen, the persons selected, because of their knowledge of local conditions, being Albert Guyot and the amateur driver M. Inghibert. The latter was scheduled to drive a Ballot in the French race, but abandoned this mount in favor of the Duesenberg eight head. This is the first occasion on which a modern American racing team has lined up in an important European automobile race, and the en-

counter is looked upon with unusual interest for while the American machines which were sent to Europe fifteen years ago were decidedly inferior, it is admitted that modern American racing cars are capable of holding their own with the best in Europe.

The number of starters in the Grand Prix now stands at 19, as follows: 4 Ballot, 3 Darracq, 2 Sunbeam, 2 Talbot-Darracq, 3 Fiat, 1 Mathis, 4 Duesenberg.

New York, March 10—Ralph Mulford and Jimmy Murphy have been selected to drive two of the Duesenbergs entered in the French Grand Prix.

Methodist Paper Ad- vocates a Car for Every Pastor

CHICAGO, March 12—"Every pastor should have a car," is the assertion made in an editorial printed by the *Northwestern Christian Advocate*, one of the official papers of the Methodist Episcopal Church.

"The minister's efficiency is doubled, trebled and even quadrupled, by the use of the four-wheeled chariot of the Apocalypse," says Dr. E. Robb Zaring, the editor. "He can visit sections where shoes, horse or human, could not penetrate. Every pastor should have a car, every rural pastor particularly. The people that the rural pastor serves probably have theirs. Pass prosperity to the parson."

FINANCE FIRM TO PAY DIVIDENDS

New York, March 11—Henry D. Tudor, president of the Commonwealth Finance Corp., has sent a letter to stockholders informing them that as soon as the assets of the present South Dakota corporation are transferred to a recently formed Delaware corporation, cumulative dividends on the preferred stock amounting to \$3.50 a share will be paid. This would cover dividends due in October and January. Tudor's letter states that in spite of all its legal difficulties, the net earnings of the corporation for January show an increase of 100 per cent over the earnings of January last year.

IOWA DEALERS ORGANIZE

Vinton, Ia., March 10—Automobile and accessory dealers of Benton county, at a meeting here a few days ago, voted organization and affiliation with the Iowa Motor Trades Bureau. H. E. Wells of Vinton, who was instrumental in forming the bureau, was named president of the organization, with W. S. Malcolm of Belle Plaine as vice-president. W. P. Kearns of Vinton was elected secretary-treasurer.

Strong Protest Against Truck Fee Increase in Connecticut

Owners Willing to Pay More Taxes but Oppose Those Named in Proposed Legislation

HARTFORD, CONN., March 11—A storm of protest greeted the committee on roads, rivers and bridges of the legislature at a hearing on proposed increase in motor vehicle taxation this week. The house of representatives where the meeting was held was crowded to the doors with protesting legislators representing truck owners, drivers, dealers and passenger car owners.

The greatest protest came from the proposition to increase the registration of a five ton truck from \$75 to \$450. It was freely expressed that such an exorbitant fee wholly out of reason would tend to discourage the sale of trucks, make long credits impossible and inflict such a hardship that the five tonner would disappear from the road. State Highway Commissioner Charles J. Bennett held otherwise pointing out that the increased cost of operation for a five tonner would be but \$1.70 per day allowing 250 working days to the year.

From what appears to be a reliable source comes the information that the House of Representatives is solidly opposed to the big increase named. Truck owners in general are willing to stand even double the present fees but they are ready to fight to the last ditch on what Commissioner Ve Bennett deems as necessary for his department.

Following the hearing on the truck situation the passenger car fees came in for attention. During Wednesday of show week Commissioner of Motor Vehicles Robbins B. Stockel gave the impression among the dealers that the new method of registration would be eight cents per cubic inch of piston displacement. However, the printed data handed out to the newspapers for publication and given the hearing was based on a ten cent fee.

Distributor's Growth Shows Value of Service in Business

Chicago, March 10.—A good service policy is largely responsible for the expansion of the Chicago-Nash Co., which is doubling its floor space in this city by the contemplated erection of an addition which will make the entire depth of the sales and service station one city block. The addition will be completed this spring.

"Looking at service from the standpoint of good business," Harry T. Hollingshead, president of the company, says, "we know that a man whose requirements are properly and promptly cared for will be very much inclined to come to us again when he is in the market for another car or truck. This applies with equal logic to buyers of used cars, for our service policy on these is exactly in keeping with that on new cars."

Executive of Maxwell Motors Denies Stockholder's Charges

**Carl Tucker Replying to Suit of
Charles J. True Asks Dismissal
of Action**

WILMINGTON, DEL., March 11—An answer has been filed in the United States District Court in the case of Charles J. True against Maxwell Motor Co., Inc., by Carl Tucker the vice president.

He claims numerous errors in the bill of complaint. Special stress is laid upon the fact that the book value of the stock of the defendant corporation, stated at \$22,117,230.80 as of December 2, 1920, is liable to deductions for reserves for depreciation, contingent liabilities aggregating \$4,513,265.80 and furthermore that said book value, approximately \$1.34 per share on the outstanding first preferred stock, is largely dependent on the defendant being a going concern. Excepting the amount of the aggregate tangible assets of the Chalmers Motor Corp. these are asserted to have had the value on December 2, 1920, of \$4,519,722.57 and not \$435,014.02 as alleged in the complaint.

It is admitted that a meeting of stockholders called to be held in this city on or about October 19, 1920, has been adjourned from time to time, and has never been held, but proof is demanded that a properly accredited representative of the plaintiff was appointed to attend said meeting, and holds that the cause of the adjournment of the meeting was the failure of the defendant to receive a sufficient number of proxies to constitute a quorum.

It is admitted that the bill of complaint filed on January 14, 1920, in the District Court for the southern district of Michigan, as well as others in Indiana and Ohio, was filed for the purpose of averting the danger of judgments, levies, etc., substantially all of the property of the defendant being located in these three states, the courts assuming jurisdiction and control of the assets.

It is denied that the equities in defendant's property are sufficient to provide for the full value of the plaintiff's stock and that of other first preferred creditors in case the property of the defendant is liquidated. The dismissal of the bill of complaint is asked.

A petition for leave to intervene in the suit has been filed by Robert W. Seaton of New York, owner of 200 shares of first preferred stock of Maxwell Motor Co.

Good Report on Allen Motors Made by Creditors' Committee

Columbus, March 11—The affairs of the Allen Motor Co. are in a better position now than they have been since the receivership began, according to a report submitted by a creditors' committee headed by R. C. Wolcott. A reorganization of the personnel has been made whereby the overhead has been reduced

\$6600 a month. Orders have been coming in at an encouraging rate. Those now on hand number approximately 300, of which 69 are for immediate shipment with payment upon delivery. No cars are being shipped to dealers who cannot pay cash. Shipments in February numbered 54 cars.

Receiver's indebtedness was reduced \$49,000 in February and outstanding drafts were reduced \$80,000. It is hoped that by April 1 all of receiver's indebtedness can be paid exclusive of receiver's certificates, as well as all bills for current requirements, and that during April some headway can be made in the reduction of the receiver's certificates. Purchases will be confined to actual requirements against bona fide orders for immediate shipments, and no further accumulation of inventory will be permitted. Altogether the situation is more hopeful than it has been at any time since the receivership began.

One Car for Every 300 Persons In One of Mexico's Big Cities

Houston, Texas, March 11—According to Jacques E. Blevins, president of the Southern Motor Manufacturing Association, Ltd., Mexico offers a broad field for American automobiles and other motor vehicles. In a letter from Guadalajara he says:

"The people of this city alone need hundreds of motor trucks. And just think, there is only one automobile for every 300 inhabitants of this thoroughly modern city; and this condition holds largely true of every other city and community in this vast country.

"Guadalajara is one of the main business distribution points in the republic, but it should not be forgotten that Monterrey, Mexico City, Merida and Chihuahua City are just as important as relates to the territory in which they are strategic points."

DAVENPORT BUSINESS IMPROVING

Davenport, Ia., March 11—Automobile dealers in this community report a 50 per cent increase in trade within the last week. An early spring and an active publicity campaign which took the place of the usual automobile show were responsible for the revival, they said. No adequate exhibit room could be secured and the dealers went into an aggressive publicity campaign.

FALLS MOTORS INCREASING FORCE

Sheboygan Falls, Wis., March 14—The Falls Motors Corp., Sheboygan Falls, Wis., has increased its working force to nearly 400, and is now on a regular operating schedule of nine hours a day, after running on a greatly reduced schedule since Oct. 1, 1920. The normal force is about 700 men. During the reduction of operations the engineering staff erected and equipped a new testing room with a capacity of 300 engines a day and otherwise improved the plant to increase efficiency to the utmost degree. The company builds 95 per cent of the parts entering into the construction of Falls motors.

Campaign to Improve Dealer Contract Started in Georgia

**Four Sectional Meetings Held
Throughout State When Resolutions Are Adopted**

ATLANTA, March 11—Contending that the contracts under which the dealers operate are arbitrary with regard to the rights of manufacturers, but that they show slight regard for the interests of the dealers, the Georgia Automotive Dealers' Association has inaugurated an intensive campaign that has as its objective an improvement in this condition of affairs. The association is co-operating with the national organization in this movement.

Within the past month four sectional meetings have been held in various parts of the state, together with a meeting of the state body in Atlanta March 10, at which time the contract matter was thoroughly discussed and resolutions adopted advocating the five important items as objectives in the national campaign. These items are outlined as follows:

Advocate an Increased Discount

First: For the automatic renewal of contracts on the basis of fair and faithful representation of the manufacturers by the dealers; second: For contracts binding both parties whether the manufacturers be one of the parties directly participating or through distribution; third: For the termination and cancellation of contracts upon a just cause only; fourth: For concession of the right to the dealers to order and receive automobiles as he needs them only and to refuse acceptance of all automobiles not so ordered by him; and fifth: For cessation of contract deposits required of dealers by manufacturers.

An increase in the discounts now allowed dealers by the manufacturers was also advocated at the various sectional meetings and at the state meeting in Atlanta.

Just before the Georgia legislature convenes this year another state meeting of the association will probably be held at Indian Springs, Ga., at which time committees will be appointed to represent the interests of the automotive industry during the time the General Assembly is in session. As was the case last year, when the association defeated a number of obnoxious bills that were introduced, several bills are being planned for introduction at this year's session that will create an additional burden for the automobile industry in this state if they are adopted.

George Hubbs, vice president and general manager of the Grant Motor Car Co., was the principal speaker at the state meeting here March 10, in which he discussed the sort of co-operation he believed the manufacturer should give the dealer, and declared that the dealer should really be considered a partner with the manufacturer in the conduct of the automobile business.

Out of Town Dealers Attend Indianapolis Show in Numbers

Crowds Attending Twenty-second Annual Event Unusually large —Trade Conference Held

INDIANAPOLIS, March 12—With every available inch of space taken in the largest automobile show building in the state, the twenty-second automobile show of the Indianapolis Trade Association, under the business management of John B. Orman, opened at the Automobile building at the State Fair grounds March 7 and continued throughout the week. The opening attendance of 8,000 was indicative of the general interest and the crowds throughout the week were unusually large. One of the most encouraging features of the show, from the dealers' standpoint, was the large percentage of attendance from points outside Indianapolis.

A very popular feature and one that added considerably to the attendance was the naming of special nights, at each one of which some club or organization took charge of entertainment specialties. This aroused no little rivalry between the organizations and they made every effort to make their special nights a success. For example, Monday night was dedicated to the Optimist Club; Tuesday to the Indianapolis Athletic Club; Wednesday afternoon to the American Club and the evening to the Kiwanis Club; Thursday to the Rotary Club; and, as is always the case at Indianapolis automobile shows, the final night was given over to the general public for fun, frolic and a display of the carnival spirit.

During the week a trade conference was held by the recently organized Indiana Automotive Trade Association and this brought into the city a large number of automotive industry men from all parts of Indiana and a number of Kentuckians in addition. This number of out of town guests was increased by automotive engineers from Chicago, Detroit, Cleveland, Buffalo and other cities who were in Indianapolis attending the meeting of the Indiana section of the Society of Automotive Engineers.

Minority Stockholders at Meeting of Templar Motors

Cleveland, March 11—N. P. Clyburn, chairman of a minority stockholders' committee, was represented at the meeting of stockholders of Templar Motors Corp. by B. F. Monnett, but according to President M. F. Bramley, had proxies representing less than 1 per cent of the stockholders. The board of directors was re-elected with but one exception, that being the replacement of A. M. Dean, chief engineer of the company, with Attorney John Orgill. Others elected were W. M. Pattison, W. O. Cooper, D. C. Reed and M. F. Bramley. The reorganization meeting will take place later.

President Bramley said the company sold forty cars in October, November and December, twenty in January and sixty-eight in February, and that orders have been taken for 162 for March and April delivery.

"We have 350 cars finished and thirty-five in process of construction," Mr. Bramley said. "We are employing 165 men out of the original number of about 900."

Made-in-Cleveland Show Displays Eleven Cars

CLEVELAND, March 11—Cleveland's second annual automobile show of the year was held on the third floor of the May Co., one of the large department stores of the city.

It was strictly a made-in-Cleveland exhibit and only automobiles made in this city were on exhibit. The display, however, was not confined to cars alone, but there were windshield cleaners, road guides, signal devices, all kinds of oils and paints and hundreds of other aids to motoring.

In the display window on the first floor there was a large statue of Moses Cleveland, the founder of the city. He held in his hands eleven reins that led to cards on which were printed the names of the eleven Cleveland-made cars that were on exhibition upstairs. The cars are the Cleveland, Chandler, Templar, Grant, Ferris, Merrit, Jordan, Stearns, Winton, Peerless and Kurtz Automatic.

The exhibit attracted thousands and not only were prospects turned in, but many sales were made. Every exhibitor asserted that it was a profitable venture. The store management said that another display would be held next year.

U. S. TRUCK GUARANTEE PRICES

Cincinnati, March 11—The U. S. Motor Truck Co. has guaranteed its prices against decrease until July 1. This announcement was contained in a letter to all distributors, dealers and salesmen. The announced purpose of the company is to do its share in stabilizing the automotive industry.

FINING TRUCKS FOR OVERLOADING

Hartford, Conn., March 10—The state highway department has been keeping close watch on trucks coming into the state from other states. Arrests have been made and substantial fines imposed. Two drivers for a Springfield trucking concern were each fined \$250 with costs of \$20.86 because their total loads were 27,000 pounds. Payment of the fines in these cases was suspended for a year, with a warning that if the overloading occurred again the fines would be collected, together with the fines for the second offense. The limit set by the state highway department is a total load of 20,000 pounds.

Strong Public Interest Is in Evidence at Boston's Opening

Annual Show Lifts Lid From Spring Selling Season—Wholesale Buying Increase Expected

BOSTON, March 12—The lid is off the spring selling season here. The Boston automobile show always a strong merchandising event promises this year to outdistance all previous shows in stimulating spring buying. Evidence of exceptionally strong public interest may be found in the fact that the doors of Mechanics building were thrown open at the request of the police fifteen minutes ahead of schedule today to relieve the traffic congestion in front of the show building caused by crowds in the street.

The day's attendance was more than 35,000 which is slightly larger than the 1920 opening day. Exhibitors were impressed particularly by the quality of the first night's attendance in which they found a good percentage of prospects; some sales were reported.

There has been a gradual improvement of business in the Boston territory, particularly in the larger communities, for the past six weeks. Sales in the rural districts have lagged somewhat. The show will bring in the rural dealers some of whom were here for the opening and a big increase in wholesale buying for spring consumption is expected.

The annual automobile roundup, the big "pep" meeting of the New England automotive trade, will be held here Tuesday night with Al. Reeves and Harry G. Moock the principal speakers. The governor and his staff will be at the show Wednesday. A salon showing several of the higher priced cars will open in the Copley Plaza Hotel Tuesday.

Wisconsin Motors Working on Schedule of 25 Engines Daily

Milwaukee, March 10.—Schedules have been released by the Wisconsin Motor Mfg. Co., manufacturer of the Wisconsin engine, to the extent of 25 engines a day, which, although a small percentage of the capacity of the plant indicates the gradual trend toward normal conditions. The Liberty Motor Car Co., Detroit, has asked for immediate shipments and has released a very substantial schedule for the next ninety days. In addition there have been numerous small requisitions which will go to make up a decided improvement in the total output.

H. W. Schnetzky, president and A. F. Milbrath, secretary and chief engineer of the company, have returned from an extensive trip through the West, surveying business conditions in general and calling on Wisconsin distributors. They report the business outlook to be distinctly favorable. The Earl P. Cooper Co. at Los Angeles and the Chandler-Hudson Co. at Seattle are optimistic over conditions and state that the west coast is fast recovering from the business depression.

Firestone Business Makes Decided Advance in March

Goodyear Increases Production to 60,000 Tires Weekly—Miller Meeting Demand

AKRON, March 11—Although directors of the Firestone Tire & Rubber Co. of Akron voted, under date of March 15, to pass the common stock regular quarterly dividend due March 20, the company lists a surplus of approximately \$33,000,000 and states that it has more than \$7,500,000 in cash in bank. The dividend is passed in order to conserve cash resources of the company, officials announce.

The Firestone statement issued in connection with the dividend action of directors, is one of the most optimistic issued by any rubber company in Akron since the beginning of the tire industry slump last May. The company is now producing about 7,000 tires daily, and is operating five days a week with full eight hour days. It is one of the first Akron tire concerns to reinstate the second shift, and is now operating two eight hour shifts on tire production. The second and third shifts were dropped with the low ebb of the tire industry slump which caused all Akron concerns to retrench and to reduce production to less than 25 per cent of normal.

Firestone reports that its surplus stock of tires is almost exhausted, and that increased production is necessary to replenish these stocks, due to the rapid increase of tire sales. For the first ten days of March the company's business took a decided spurt, sufficient to warrant the official prediction by President H. S. Firestone that his company would do business in excess of \$6,000,000 in March. The company's sales for the past fiscal year were \$114,980,969, as compared to \$91,078,513. Figuring on this basis Firestone is now doing nearly 60 per cent of its average monthly business of last year. This is perhaps a higher percentage of respective normal business than is being done by any Akron tire company at the present time.

In addition to being one of the first to re-establish the second shift, Firestone is also the first Akron tire concern to begin re-employing men. During the past few days several hundred men have been taken on.

The Firestone prediction of a shortage of tires is strongly corroborated by recent action of the Miller Rubber Co. of Akron in calling in all available supplies of tires from districts where sales have been slow, in order to rush such stocks to points where sales are increasing rapidly. This action will preclude necessity for the time being at least, of materially increasing production.

The Goodyear Tire & Rubber Co. has just increased production from 25,000 tires to 60,000 weekly, which is slightly less than one-third of peak production. Whether the company puts on any great number of men will depend largely upon

the successful consummation of the company's refinancing program involving \$85,000,000.

Akron, March 14—The meeting of the stockholders of the Goodyear Tire & Rubber Co. scheduled for Tuesday, March 15, is to be adjourned according to an announcement today by George Stadleman, vice president. Delay is due to a hitch in negotiations with the merchandise creditors who have refused to give unanimous assent to the plan of readjustment. Progress is being made, however, according to Mr. Stadleman. The date for the meeting will be announced later. Mr. Stadleman states that enough personal and proxy vote stockholders are in as shown by a canvass to insure a 75 per cent vote in ratification of refinancing which involves \$85,000,000 and the reorganizing of the company.

Weed Patents of Reversible Chain Grip Held to be Valid

Wilmington, Del., March 11.—In the suits of the American Chain Co., against the United Auto Stores, Inc., Judge Hugh M. Morris in the U. S. Court, here entered the final decree Feb. 25, 1921 holding Weed patents 768495 of the reversible chain grip to be valid and infringed by the grips made by George J. Campbell and sold by the United Auto Stores.

It was also held that the infringing grips were finished in a style or dress that closely imitated the Weed grips made by the American Chain Co., as to constitute unfair competition in that the defendant's grips were finished with gray side chains and cross chains having a light coating of copper. It was held that this style of finish or dress of chain grips was distinctive of the Weed grips and should not be used by other concerns. A permanent injunction was granted against infringement of the Weed patent and against their manufacture or sale of grips having gray side chains and either copper or brass plated cross chains.

TO INSURE FULL GAS MEASURE

Fort Worth, Texas, March 5—Protection for the public, for the filling station owner and for the filling station employee is the object of a new organization, being formed among employees and employers in Fort Worth and fostered by City Weights Inspector J. C. Buchanan. The latter, following the condemnation of many inaccurate pumps, warns the honest employees to perfect this organization and to guarantee full measure of gasoline and oil to the public.

NAME ROTARY TIRE RECEIVER

Columbus, March 11.—Upon application of eight stockholders, Judge Duncan of the Franklin County Court appointed V. H. Loveless of this city receiver for the Rotary Tire & Rubber Co. His bond has been fixed at \$25,000. The petition states that the company has assets of about \$20,000 but that W. H. Hendricks, secretary and treasurer of the company, contracted for the purchase of \$286,000 worth of cord fabric and gave notes on account for \$44,350.

Standardization of Wheels Will Be Hoover Suggestion

New Secretary of Commerce Favors Reduction of Models from Eleven to Four

WASHINGTON, March 10—Standardization of automobile wheels will be suggested to the automotive industry by the Department of Commerce as part of a nation wide movement toward standardization of manufactured products. In his first interview with Washington correspondents since assuming the Cabinet portfolio, Secretary Hoover cited the automobile wheels as an instance where standardization would prove effective. He stated that it was possible to cater to the needs of the automobile users by reducing the size of wheels from eleven styles to four. Mr. Hoover contended that this reduction in models would automatically reduce the expense of keeping rubber stocks by half. He asserted that the experience of the war had demonstrated the necessity for standardization and its economies.

To Encourage Research

Mr. Hoover's interest in standardization of automobile wheels would indicate that he will encourage the research activities of the Bureau of Standards which is under his supervision. This Federal agency has numerous investigations relating to standards in the automotive trade under way but failure of Congress to provide additional funds has somewhat checked its work. It is believed that with a national movement for standardization it would be an easy matter for Mr. Hoover to obtain special or deficiency appropriations for whatever scientific inquiry the Bureau might undertake.

The question of economies of distribution will undoubtedly be stressed in all branches of business. It is here where the economies of highway transportation will be demonstrated for shippers are desirous of relief from expensive rail hauls. With the Department of Commerce in support of a nation-wide movement for savings in transportation costs, it is expected that shippers' attention will be forcefully turned to the latest and most improved method—motor transportation.

TRAILER DEALERS TO ORGANIZE

Dallas, Texas, March 5—Trailer dealers of Dallas will form an association in the near future. The new association will be aligned with the Dallas Automobile Association. With the garagemen already organizing, the truck men organized, the closed car dealers operating an association and the accessory dealers preparing to organize an association the automobile business in Dallas will be the most closely united industry of its kind in the South. All of these organizations will be affiliated with the automobile club and all will work for better business, better roads, better laws and better traffic conditions.

Better Salesmanship and More Sales in Sacramento

Motor Car Dealers' Association Is Preparing for Year of Intensive Selling

SACRAMENTO, March 11—Orders are not piled on the desks of sales managers of local automobile dealers and distributors here, but the business has revived to the normal pre-war volume and sales are going ahead as in days before the "big boom" in the business. In the last two years there has been a very decided strengthening of the motor car market throughout northern California. Dealers and distributors alike report the sales good, with indications that even better times are ahead.

No one predicts there will be any return of the war-time conditions, when any kind of a car would sell and dealers were months behind with their deliveries. The days of the easy-come orders appear to be past; but business is down to a solid foundation, with the fancy false work of boom times eliminated, and dealers are building good business on that foundation.

There is a healthy competition stimulating the trade. Buyers are showing discrimination and an indication that they know what they want. Dealers are urging their salesmen to greater efforts and those who "broke in" in the automobile business when it was just a question of sitting still and getting orders are readjusting themselves to new conditions. Salesmen who left the business for other positions during the recent slump are coming back, despite the general satisfaction expressed by their new employers in the class of men secured when the automobile business was slack.

The Sacramento Motor Car Dealers' Association is preparing for a year of intensive selling, and plans are being laid for an advertising campaign by the association to sell automobiles, letting the dealers as individuals advertise to direct the prospects to their doors.

New Vulcanizing Process Patented by Tire Dealer

Augusta, Ga., March 10—T. A. McAllister, proprietor of the Auto Top & Tire Co., of this city, has recently perfected and patented a new vulcanizing process that has attracted considerable attention among service station managers in the Southeast. The virtue of the new method, it is said, lies in its ability to perfectly repair tubes that have been torn around the valve, completely across, or have been split for a considerable distance. As at present employed the method calls for the insertion of backing or reinforcement on the inside of the tube. This method places three thicknesses of rubber at the edges of the tear and a double thickness in the actual hole. The method devised by Mr. McAllister leaves the entire repair the same thickness as the tube.

He has perfected a cement and a stock that enables the raw rubber to flow into the rent in the tube without adhering to the inner side. Regardless of the size of the job the repair can be completed in a few moments' time. He now has on display at his Augusta shop a tube with thirty-one repairs of this nature that has been in service for more than a year and a half and is still perfectly tight. The new

Schools As Prospects for Motor Vehicles

NEW YORK, March 11—The National Automobile Chamber of Commerce finds that rural schools today need thousands of automobiles to replace horse-drawn equipment, to renew worn-out motor transport units and to serve additional school routes. It says that—

Twelve thousand consolidated rural schools in the United States are using vehicles for transporting pupils.

About half of the equipment is motorized and half horse-drawn.

One hundred and ninety-four thousand one-room schools not yet consolidated promise great future for the motor vehicle market.

Two hundred and seventy-five new consolidations are under consideration in Pennsylvania.

A consolidated school is one which combines several districts. This means that some of the children must be brought from a considerable distance. The United States Bureau of Education and other leading educational authorities recommend consolidated schools which mean better buildings, better paid teachers, and consequently better instruction for the children than the one-room schools can afford.

patch is to be manufactured, Mr. McAllister states, at Akron, Ohio, arrangements to that effect having been recently completed by the inventor. It will be sold exclusively as a shop method to garages, service stations, etc.

CHARLESTON SHOW HELPS TRADE

Charleston, W. Va., March 11—Retail sales of automobiles were stimulated in this city by the automobile show. This section has not been so hard hit as many others by the industrial depression and the outlook is good for the coming year because Charleston's industries are diversified. As a matter of fact, the city is growing more rapidly than it ever has before. The population includes many persons of wealth and there is a good market for high priced cars.

MACKIE LEAVES WAUKESHA

Waukesha, Wis., March 10—Mitchell Mackie, sales manager of the Waukesha Motor Co., who has been with that concern since 1915, has resigned to take effect March 1. Mr. Mackie has not announced his plans.

Cleveland Association Now Working as Independent Body

Formed Two Years Ago, It Decides to Separate from Chamber of Commerce

CLEVELAND, March 12—A new organization stepped into the limelight in circles of the automobile industry in this city and state when the Automotive Association unanimously voted to divorce the association from the Chamber of Commerce and to open its own headquarters in the Hotel Winton.

This step was taken because it was felt that the association could function with greater freedom by being independent of any connection with any other organization.

Parlor F, on the mezzanine floor of Hotel Winton, will be occupied by the executive of the organization, A. O. Williams. A fine library of books and magazines that pertain to the automobile business will be kept on file. Members are urged to take full advantage of the club or lounge room. There friends may be met, conferences held over business and general trade conditions and advice be given about movements and developments of interest to the industry.

The Automotive Association was started nearly two years ago through the influence of the Chamber of Commerce and it has until recently operated as a department of the parent body. Some few months ago Mr. Williams, who has been for years in various branches of the automobile industry, was elected secretary-manager of the association and under his leadership the scope of the body's activities has been widened and its influence has been broadened.

The association members are now centering their activities toward protecting and furthering the interest of the industry through legislative enactment. Bills pending in the general assembly that are regarded as pernicious are to be opposed and others that are considered beneficial to the industry are to be favored.

Business in Smaller Towns in Georgia Takes Turn for Better

Augusta, Ga., March 10—Dealers of the tenth congressional district of Georgia at a special meeting held here, declared that the automobile business in the smaller towns has taken a turn for the better the past few weeks and expressed the belief that the return to normal has set in. Nearly all of the dealers of the district who are members of the Georgia Automotive Dealers' Association were present.

Volney Williams, of Waycross, president of the association; P. A. Magahee, of Atlanta, secretary, and W. T. Watters, of Macon, a director, were present at the meeting. The dealers stated that sales in the smaller towns and communities are still far below normal, but that greater interest is being shown by the public while more actual sales are being made than for some months.

Concerning Men You Know

Roland Rohlf's holder of several world's altitude records for airplanes, has given up flying. He is now a salesman for the Ostendorf Motor Car Corp. of Buffalo, and is engaged in selling Franklins. Rohlf recently climbed to an altitude of 34,610 feet. He holds many other airplane records.

H. J. Behr, formerly manager of mechanical sales for the B. F. Goodrich Co., in the Philadelphia district, has been appointed general manager of the Goodall Rubber Co.

The Safety Fender Co., of Waupun, Wis., has been organized by A. H. Luebke, C. Lemmenes and Gerret Hull to engage in the manufacture of a new type of bumper device for the front of passenger cars and trucks. It was designed by Mr. Luebke and is operated by pressure upon a pedal in the front compartment by the driver. This lowers the bar to a distance of about 8 in. above the street or road surface. A basket arrangement may be attached, similar to the emergency fenders used on street cars. The new company is equipping a plant and expects to be in production about March 15.

E. P. Grismer has been placed in charge of the Cleveland territory for the Stewart Mfg. Corp., which has recently opened a sales office at 942 Prospect Avenue that city.

W. A. Beardsley has been named district sales manager for the states of Washington, Oregon and Idaho of the Winther Motor Truck Co. of Kenosha, Wis. A. J. Landrum of Laredo, Texas, has been appointed distributor for southern Texas and the states in northern Mexico. The Harper-Libby Co. of Boston has been selected distributor in eastern Massachusetts.

Geo. C. McMullen, who has represented both the Timken Roller Bearing Co., and the Timken-Detroit Axle Co., in the Pacific Coast territory for the last three years, will in the future devote his entire time to sales engineering in the sole interests of the Timken Roller Bearing Co., with headquarters in the Monadnock Building, San Francisco. Mr. McMullen's former assistant, C. H. Brooks, will take care of the business of the Timken-Detroit Axle Co.

Seymour R. Cochrane has been promoted to director of the sales division of the Allison-Rood Co., Lincoln distributors for the Chicago territory. He was formerly director of the exchange car division of the company.

Guy C. Core, former advertising manager of the Jackson Motors Corp., Jackson, Mich., has joined the Horsting Company Advertising Bureau in Chicago.

Frederic N. Dodge has been appointed sales manager of the Cleveland Branch of the Baker-Fisk-Hugill Co., Dort distributors of Detroit. Mr. Dodge was formerly assistant advertising manager of the Dort Motor Car Co., of Flint, Mich., and previous to that time was connected with the Fairbanks Co., of New York, as sales promotion manager of the automobile and service station equipment division.

Charles O'Harrow, identified with the automotive industry in Waterloo, Ia., for many years, has become associated with the A. L. Alexander Co., as director of sales. The Alexander company handles the Liberty and Chevrolet.

H. I. Bunting, Cedar Rapids, Ia., has purchased an interest in the Cedar Rapids Velie Co., and is back in Automobile Row after an absence of several months.

J. D. Thompson of Cedar Falls, Ia., has disposed of his interest in the Buick automobile agency there and has assumed charge of the northeastern Iowa agency for the Equitable Life Insurance Co.

W. T. Wilson, associated with the Capital garage in Des Moines, Ia., for the past six years, is dead after an illness of two weeks from pneumonia. He was well known among Iowa automotive men, having been with the Mason plant in Des Moines for many years, and later in Waterloo.

C. A. Woodruff, former purchasing agent for the Chalmers Motor Co., the Saxon Motor Car Co., and the Liberty Motor Car Co., has joined Briscoe Motors, Detroit, as director of purchases.

Frank J. Flynn has been appointed service manager for the Connecticut Telephone & Electric Co. of Meriden, Conn., assuming the responsibilities of the position at once. Mr. Flynn has been for several years with the Connecticut company in the field, both among service stations and jobbers. I. L. Doolittle, who has been service manager for the past two years joins the sales division of the company.

E. Hunn, Jr., up to the present time assistant to President Emlen H. Hare, has been made general manager of the Enterprise Motor Corp., New York, handling the Kelley-Springfield truck, one of Hare's Motors products. The general sales manager is George S. Hauck and E. H. Dorman retains his post as service manager.

Karl W. Volk of Cleveland has been appointed manager of the Stewart Products service station, Toledo. He has been with the company in Cleveland for two years and before that time was with the Peerless factory for seven years.

A. L. Jacobs, for the last three years with the Patterson line in Toledo, has been employed to handle territory sales. Lloyd George, formerly of the Standard Garage, and Norman E. Stoneburg, of the Marmon agency, have been added to the city sales organization.

Saville Baar, formerly of the Simon Sales Co. forces, has joined the Studebaker Corp. branch in Detroit. Baar formerly sold the Mercedes car in London, Paris and Melbourne. He speaks 14 languages and during the war period was attached to the Americanization Bureau of the Chamber of Commerce. His automobile sales activities have been devoted chiefly to foreign language buyers.

Paul M. Hutchings, Hudson-Essex distributor at Grand Rapids, Mich., has taken on the Lafayette car for western Michigan.

with a paid capital of \$225,000 has an annual business of \$3,000,000. Mr. Schmelzel has been handling the whole-sale tractor end of the business, which is a Ford agency company.

The name has been changed to J. W. Hutchins Co. Mr. Hutchins is president, W. E. French is treasurer and W. S. Williams is secretary. Mr. Hutchins has been vice president. Up to four years ago he was manager of the Ford branch at Omaha. Mr. French up to three years ago was connected with the Ford business in Omaha, Toledo and Detroit. Mr. Williams has been secretary two years and is vice president of the Automobile Trades Association.

Seeks Service Managers Views on Pending State Legislation

New York, March 11—A questionnaire asking for the views of factory service managers on bills pending in nine state legislatures which would provide for the examining and licensing of garages and repair shops have been sent out by the service committee of the National Automobile Chamber of Commerce at the request of the legislative committee.

The states in which such legislation is pending are, Arizona, Colorado, Connecticut, Idaho, Illinois, Minnesota, Nebraska, North Dakota and Texas. In general the bills provide for the establishment of a board to examine and license mechanics and forbid others to work on automotive equipment except as helpers to licensed mechanics. The proposed license fees vary from \$2 to \$10 and fines for violations from \$10 to \$100. The Idaho and Minnesota bills differ in that they would license the garage or shop instead of the mechanic.

CALUMET TRUCK NAMED

Calumet, Mich., March 10—Directors of the Calumet Truck Body Corp. have decided to name the new product "The Calumet All-Purpose Truck Body." Fifteen bodies have been completed at the plant and material is on hand for the manufacture of an additional one hundred. A force of twelve men now is employed and additional material for 125 bodies is in transit.

TEXAS CHEVROLET REOPENS

Fort Worth, Texas, March 11—The Chevrolet Motor Co. of Texas, with headquarters here, has resumed operations after being closed down for some time. The operating force is 30 per cent of the old force and it is planned to increase this force from time to time until normal working conditions are reached. The Texas plant turns out complete automobiles.

G M C DEALERS AT TRADE RALLY

Cleveland, March 10—Fifty G M C dealers, who represent thirty-three counties of northern Ohio, attended a trade rally here and heard W. L. Day, president and general manager of the General Motors Truck Co., of Pontiac, Mich., and vice-president and a director of the General Motors Corp., speak on new models and merchandising methods.

Death Takes W.H. VanDervoort, Long Head of R. & V. Industries

East Moline, Ill., March 11—Following an illness of more than a year, W. H. Van Dervoort, head of the R. & V. industries, died at his home here Friday. Mr. Van Dervoort's life has been devoted to the business which bears his name and the success that he achieved both for himself and the industries was the result of unceasing labor, coupled with exceptional engineering skill and a marked capacity for organization.

He, with O. J. Root, a roommate and classmate at Michigan Agricultural College, formed a partnership in 1899 for the manufacture of gasoline engines and locomotive specialties. The factory was later moved from Champaign to East Moline and in 1903 the Moline Automobile Co. was organized with Mr. Van Dervoort as its president and general manager. Steady growth of the business

followed with each year and a score of new buildings were added one by one to meet the requirements of the steadily growing R. & V. business. From time to time there were changes in the corporations and Mr. Van Dervoort headed all of the corporations controlling the various R. & V. activities in more recent years.

Mr. Van Dervoort was born in Ypsilanti, Mich., Feb. 28, 1869.

W. H. Schmelzel Retires From Business That Bears His Name

St. Paul, March 10—W. H. Schmelzel, president of the Schmelzel Co., this city, has sold out to his associates and is seeking health in the south. Mr. Schmelzel recently was elected president of the Automobile Club of St. Paul, and served two years as president of the Automobile Trades Association. Although in business less than four years the company

The Tide Has Turned In Iowa

Conditions in State Indicate Improvement—Show Held at Des Moines Crystallizes Sentiment Among Men of Trade That Worst Has Passed—Small Dealers Aided

DES MOINES, March 11—The tide has turned in Iowa.

While the break is far from complete it is headed in the right direction and the motor car dealers of the state have started to fight back to the positions they formerly held.

Undoubtedly one of the greatest results of the twelfth annual show of the Des Moines Automobile Dealers' Association held March 2 to 10 was psychological and that was the crystalization of sentiment among the men

of the trade that the worst has passed and that conditions have improved.

The dealer in the small town has been afraid for four weeks to depend upon his own judgment that conditions are improving, but when he got into the show and found that a big majority of his fellow dealers were reporting business as looking up he decided that his judgment was right and that the break has come.

And so we say that probably the greatest result of the Des Moines show was a psychological one.

THE Des Moines show this year is an innovation in that it is two complete shows, the first four days being devoted to open models and the last four to closed cars. It is too early to determine whether or not the idea is a success.

The show was forced to such an arrangement by reason of the fact that the only place in which to hold the show is the Coliseum which is entirely inadequate to house a complete showing of both open and closed models from the fifty-four lines which are showing.

The attendance from the public has been just about equal to the 1920 attendance. The dealers' attendance has shown material increase, and not until Monday was the attendance from out of town dealers a real factor. This delay among the out of town dealers is attributed considerably to the fact that the Iowa Motor Trades Bureau planned big meetings for Monday night and Tuesday and many of the dealers waited so that they might attend these meetings.

There were more out of town dealers for the show Monday than during the entire four days preceding.

Actual sales at the show have shown a falling off from that of previous years but there have been a number of sales, and knowing conditions as they exist local dealers say they are entirely satisfied with the sales' results.

This year's show received the best publicity of any show in the history of the Des Moines Dealers' Association. Newspapers cooperated as they have never done before. Considerable publicity was given the show in the two weeks preceding by contests conducted by two of the local dailies. One paper offered a prize for the person suggesting the best slogan for the show which resulted in the phrase "U auto seen 'em at the Coliseum," while another had a contest for pupils in the three high schools for the best poster drawings to advertise the show.

The Payne Motor Co., Paige distributors, brought Ralph Mulford to Des Moines for the show and attracted considerable attention with daily demonstrations on a steep graded road to the west of the city.

Dealers Realize They Must Clear Decks for Action

THE best thinkers among the motor car and truck dealers of the state recognize that they are going to be compelled to go out and fight for business as they have never done before and they realize that in this fight the only dealers who survive are going to be the ones who have organizations efficiently prepared to battle, with their decks cleared of all frills and non-essentials, for action.

The Clemens Auto Co., Overland distributors, had a vacant corner opposite the city's leading corner and had two cars going all the time, one without a driver, following a circle, and the other riding over a raised platform, with a series of steps.

One of the most interesting features in connection with the double show was the fact that Saturday night every open car in the Coliseum was removed from the floor in a period of eighteen minutes and the closed cars were all in place inside of fifty-two minutes. This change was made so quickly that without previous announcement the show was opened to the public Sunday for exhibition only and with a sacred band concert as the main feature.

Sales managers and manufacturer's representatives present at the show generally recognized that during the past six months there has been no section of the country harder pressed so far as sales conditions were concerned than Iowa. This is largely the result of the fact that the big one market for cars in Iowa is the farmer and for six months he has been entirely removed as a buy-

ing factor. The Iowa farmer harvested his 1920 crops under the most expensive conditions in history but at harvest time was confronted with a market fifty per cent below that of the previous year. With the second largest corn crop in the history of the state crop valuations were reduced by lower prices to forty per cent below those of 1920. These facts put the farmer in an ugly mood. He was not on the market for anything. He held his grain for higher prices and went without things he didn't actually require.

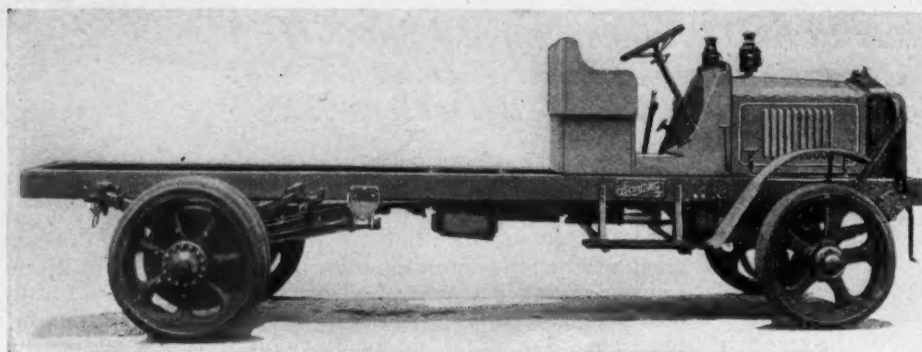
But during the past thirty days conditions have begun to show an improvement. Grain prices have strengthened and the movement of grain which normally starts immediately following harvest began in February. This of course had its effect on credit conditions and they have shown a decided improvement. While in some parts of the state bankers are still sitting tightly on the lid, for the greater part of the state there is a markedly easier tone noticeable so far as credits are concerned.

The statement that sales conditions are improving is based upon interviews with solid, conservative dealers and distributors not only of Des Moines but of Cedar Rapids, Waterloo, Ft. Dodge, Council Bluffs as well as some of the smaller cities of the state.

Without exception these men agree that the break for the better is noticeable. They say it is particularly true of light cars selling at low price. All dealers agree too that the demand for used cars during the past thirty days has shown a decided improvement, heavier by far than that for new business.

The truck dealer too says things are looking up. There appears to be the opening of a demand from the farmer and this is considered unusual not only in consideration of the general conditions noted but from the further fact that usually the farmer has been on the market for trucks at harvest time. Prospects who four months ago would not even talk to truck salesmen are now ready to listen and many of them admit that within the next ninety days they will be on the market.

Recent Designs of the Truck Makers



The new Standard 5-ton model is heavier and more powerful than the previous designs of this company

Standard Five-Ton Truck

Designed to meet the requirements of road building and excavation work, the new Model 5-K Standard truck is build longer, and is heavier and more powerful than the former Standard models. It is powered by the new Continental B-2 engine which gives this truck an S. A. E. horsepower rating of 36 1/10 with 43 hp. at 1,000 r.p.m. and 55 hp. at 1,300 r.p.m. Other features are the built-in governor, 1 1/2 in. carburetor instead of 1 1/4 in.; larger universal joint; wheelbase of 164 in. compared with 160 in. on the other model, and 600 lb. heavier. The bore and stroke has also been increased from 4 1/2 in. by 5 1/2 in. to 4 3/4 in. by 6 in.

Other specifications are given below:

Carburetor	Stromberg
Magneto	Eisemann
Clutch	Brown-Lipe
Transmission	Brown-Lipe
Front and rear axles.....	Timken
Springs	Semi-elliptic
Universal Joints.....	Spicer
Gasoline Tank.....	27 gal. capacity
Weight.....	8,700 lb.

The chassis is sold completely equipped including driver's seat, cushion and back, bumper, mud guards, tool set, etc., by the Standard Motor Truck Co., Detroit.

New Waltham Motors Truck

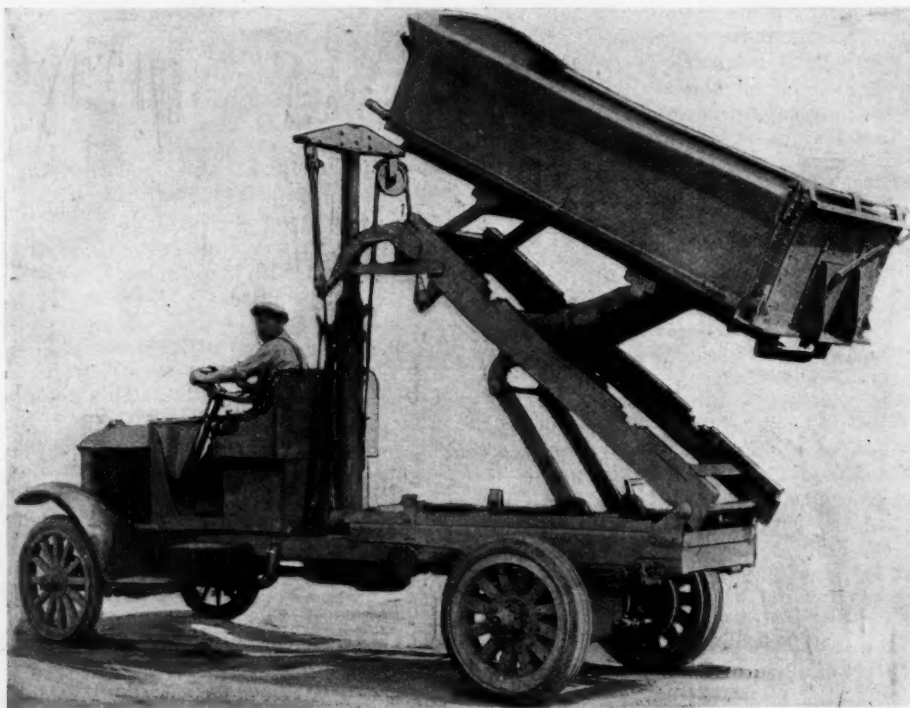
A one and one-half ton truck of the speed wagon class is announced by the Waltham Corp. Chicago. Hotchkiss drive semi-elliptic front and rear springs are used and the Buda CTU engine of 3 3/4 in. bore and 5 1/4 in. stroke. It comprises other specifications as follows:

Carburetor	Zenith
Governor	Pierce
Lubrication	Alemite
Clutch.....	Dry plate multiple disk
Transmission.....	Selective type, three speeds forward, one reverse
Front and rear axles.....	Sheldon
Wheels	Wood
Tires.....	Firestone, 36 by 3 1/2 in. front, 36 by 5 in. rear
Weight.....	3,800 lb.
Wheelbase.....	140 in.

Capacity.....Normal load, 3,000 lb.
Including the driver's cab as regular equipment, this model lists at \$2,350.



This 1 1/2-ton Waltham truck with pneumatic tires lists at \$2350, including driver's cab

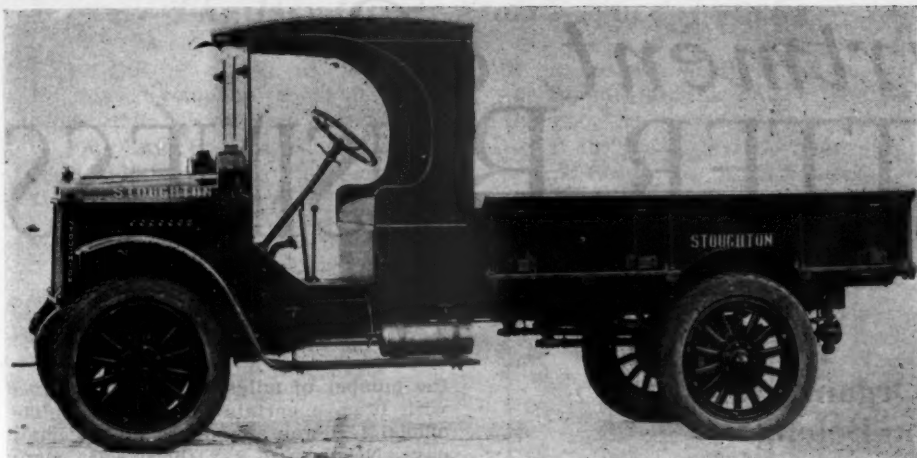


Elevating dump body designed by the Federal Motor Truck Co. for their two-ton models

Elevating Dump Body

For the many purposes where it is desired to dump into a receptacle standing at any height up to 6 ft. above the ground level, and principally for coal delivery purposes, the Federal Motor Truck Co., Detroit, have designed and are manufacturing an elevating dump body for the two-ton Federal trucks. It is composed of three principal units: A dump body, very much like an ordinary body; a hydraulic hoist, and an elevating mechanism under the body. Two dumping positions are possible with this body—the elevated position which raises the lower end of the body 6 ft. above the ground, and the ordinary position.

The dump body is the ordinary type of body with a flat sliding bagging chute door in the tail gate and carrying an 18



The Stoughton one-ton speed model is suitable for all light delivery service and for farm markets

ft. telescoping chute in a cradle under the body. The elevating mechanism is composed of the following parts: The frame extension which extends above the chassis frame and carries shafts, brackets, etc.; the elevating frame pivoted at the rear; the main elevating lever, pivoted at center of elevating frame, pull rods, release hooks, shaft and hand lever, and the front elevating member. This member being joined to the body and the main elevating frame, lies almost flat. This body, complete with all mechanism weighs 2950 lb. and is priced at \$1250. As extra equipment a short chute to be used for dumping into coal shed windows can be obtained for \$15.

Luedinghaus One-Ton Truck

The Luedinghaus Quality Motor Truck Co., St. Louis, have added to their line a one-ton truck of light weight, capable of maintaining an average speed of 30 miles per hour. It is electrically equipped in every detail, including electric starter and lights in front and rear. Some of the specifications are as follows:

Engine.....Waukesha 4 cylinder, 3½ by 5 in. bore and stroke
Clutch.....Borg & Beck, dry disk
Transmission.....Grant Lees
Wheel Base.....130 in.
Front Axle.....Drop forging, Timken roller bearings
Rear Axle.....Worm drive
Tires.....Pneumatic cord, 35 by 5 front, 35 by 5 rear

Stoughton One-Ton Truck

Embodying all the construction features of the heavier trucks built by the Stoughton Wagon Co., Stoughton, Wis., a one-ton speed truck is now in production. This truck was built particularly for use in all kinds of delivery service and for the farm market. It is powered by a Waukesha BUX 4-cylinder engine of 3½ by 5½ bore and stroke. Other units comprising this model are as follows:

Carbureter.....Stromberg Model M
MagnettoEisemann
Clutch.....Brown-Lipe, multiple disk

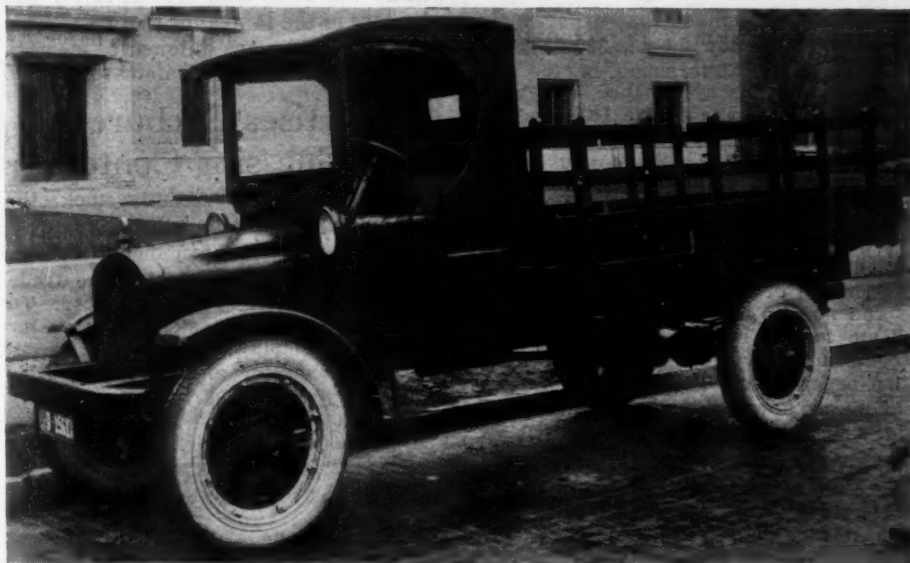
TransmissionBrownLipe
AxlesSheldon
Gear Ratio.....Rear Axle 5 to 1
SpringsSheldon
Tires.....34 by 4½ front, 35 by 5 rear.
Cord, pneumatic
Wheelbase.....130 in.
Horsepower.....22-3 S. A. E. rating

Cyclone Truck Designed for Southern Traffic

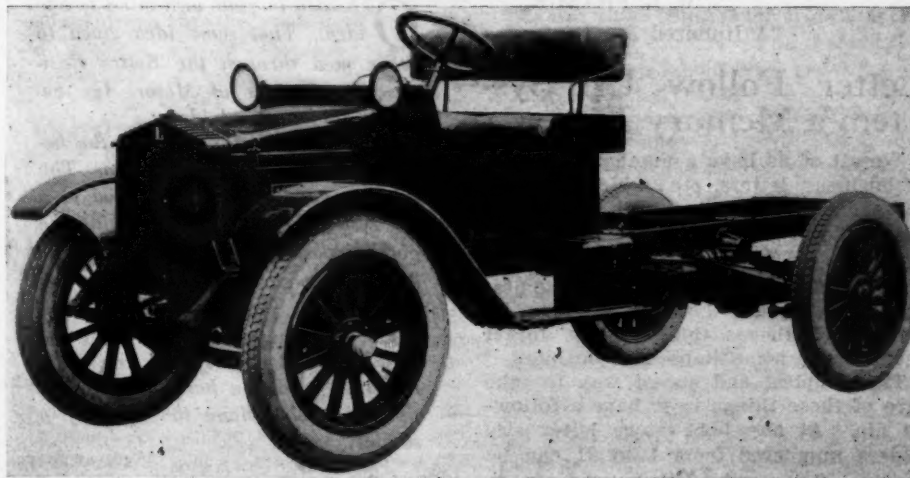
Built especially to meet the transportation problem of the South, the Cyclone truck, manufactured by the Cyclone Starter & Truck Co., Greenville, S. C., of 3,000 lb. capacity, and of sturdy construction, has the following specifications:

Engine.....Herschell-Spillman, 4 cylinder, 3½ by 5 bore and stroke, 35 hp. at 1,800 r.p.m.
IgnitionWestinghouse
StartingWestinghouse
CarbureterWheeler-Schebler
TransmissionBrown-Lipe
Clutch.....Multiple dry disk
Axles.....Columbia front axle; rear axle, Torbensen internal gear
Wheels.....Wood disk type
Tires.....Pneumatic cord, 34 by 5 front, 36 by 6 rear
Wheel base.....135 in.
LubricationAlemite
Weight.....Chassis 3,200 lb.

As extra equipment comes a spare rim, pump, electric horn, full set of tools, heavy duty jack, tire repair kit, bumper, front fenders, running boards, cab with weather proof curtains, ammeter and Alemite pressure feed compressor.



The Cyclone 1½-tonner is designed to meet the transportation requirements of the South



This model of the Luedinghaus Quality Motor Truck Co. is for fast work. It is claimed capable of maintaining a speed of thirty miles per hour

A Department of BETTER BUSINESS



Conducted by Ray W. Sherman

Cashing In on Organizations to Which You Belong

ARE you, Mr. Dealer, cashing in as extensively as you might on the organizations in which you hold membership? The Prange Motor Car Co. of Fort Wayne, Ind., believes fully in doing this and in also getting colloquial and intimate in the letters it sends to members of the organizations to which the company's officials belong. For instance, here is a letter sent by the company to the members of the 100 Per Cent Club:

"Dear Hundred Per Center—

"This is to announce that we are now located in our new home, 320-22 East Main Street. While some of the details pertaining to appearance, etc., have not been taken care of, we DO have on display some of the popular and medium priced 1921 models. Should you be interested in a new car for this season, we would sure appreciate having you look over our line before making your final decision.

"So much of that.

"And now to ask you a favor.

"Due to our recent expansion it has become necessary to develop a stronger sales organization, and thus it happens that we are now looking for a young man of the 100 per cent calibre who wishes to associate himself with the automobile business in a selling capacity.

"If any of you fellow members know of a friend who, you think, might be interested, a mention of our opening may be of mutual value.

"Yours very truly,

"W. C. PRANGE,

"A Hundred Per Center."

Letter Follow Up System a Memory Jogger

We all of us have a number of details of business, letters, etc., which we want to take care of at a certain time. For instance you want to pay a bill on a certain date or call on some concern or write another letter to a party if the first one is not answered. Most of us try to remember these things and forget occasionally some important business.

The simplest and surest way to take care of these things is to have a follow-up file. At any book store letter size folders numbered from 1 to 31 can be bought. Get a set of these and put in your desk or wherever you keep your

correspondence. Put in the bills, letters or memos of anything you want to follow up on a certain day. Arrange the folders numerically. Every morning when you arrive at your place of business get out the folder for that date which should be in front. Take care of the things you have in there and put the folder at the back. So every morning the folder for that day will be right in front. Soon you will get so that the first thing you will do will be to look in your folder and take care of the things for that day. This way you have an automatic memory jogger.—W. E. Fuller, Kalamazoo, Mich.

Advertises Carbureters by Guessing Contest

An Iowa dealer recently took the agency for a carburetor whose outstanding feature was the phenomenal mileage obtained per gallon of fuel. The trade was mostly owners of a popular car. To introduce the carburetor, the dealer made a neat display in his window showing the carburetor and offered a prize to the party who could guess most nearly

the number of miles per gallon obtained with it on a certain make of car. The official test was announced for a certain day. Needless to say there were many present at the test and a number of carbureters were sold as a result. To finish his campaign, the dealer ran an ad in the local paper announcing the winner and the mileage obtained.—Lowell R. Butcher, Colfax, Iowa.

Receives Orders by Wireless Telegraph or Phone

P. W. Craig, who operates one of the many automobile service stations in Birmingham, Ala., has installed both wireless telegraph and wireless telephone service at his station and states that he is able to receive orders from a distance of 2000 miles by wireless.

His installation of so modern equipment for the benefit of the automobile public should undoubtedly bring good results and now many people, not his customers, are calling at his station to see his equipment and incidentally they fill up and are becoming steady customers. If only from an advertising standpoint, his method of service will be hard to beat.—Wofford Oil Co., Birmingham, Ala.

Dollar Tire Sale Brought Results

The Long Distance Tire Co. of Fort Wayne, Ind., recently put on a \$1 tire sale which attracted much attention and brought a large amount of business to the concern. The proposition was stated by the company in its advertising matter as follows: "You buy one tire at list price and we will sell you one more tire for \$1 more." The company then listed all the sizes of tires sold, such as 28 by 3, gave the list price of \$20.10 and then opposite gave the price for two tires of this size, 21.10. Tubes in all sizes were also sold for a dollar during this sale.

Keeps Hood Off Car Stationed at Curb

A distributor with the idea of drawing attention to the car at the curb in front of his salesroom raises the hood and allows the public to see what is underneath. The scheme has worked out very well. At least five people out of ten stop when they see the raised hood. They look at the name plate and then for the salesroom.

Your Good Ideas— Are They Working?

ONE idea in your own mind is one idea. That same idea given to other men through the Better Business Department of Motor Age becomes thousands of ideas.

Ideas help us all. They are the beginning of money-making plans. The smallest good thought may lead to a big result. Just as you are getting the good ideas of others through this department, give them a chance to get square with you by using one of yours. For the trouble of writing the idea Motor Age will send you ONE DOLLAR and you have the satisfaction of having done the industry a service.

The Dry-Goods Stores Need Trucks

DRY-GOODS stores in the smaller towns complain about mail order competition. Have you ever explained to your local dry-goods merchants that if they have a truck they can deliver goods over a radius of 50 to 100 miles quicker and in better shape than the mail order house can?

This is just one selling point that might interest your local dry-goods stores. Show them the advertising value of a delivery truck. Tell them that keeping the truck on the road even when it has no deliveries to make will lead people to think that the store is busier than it actually is and induce people to do more business with it.

Don't stop with the store itself but try to sell its owner and its principal executives who command good size salaries. They ought to be good prospects for passenger cars. If they haven't any now, they certainly have need for them and if they have old models they ought to have a new 1921 car.

There are 47,000 dry-goods stores in the United States rated at \$5,000 and over. Of these, 18,000 are rated at \$10,000 and 14,000 are over \$10,000. These are all A1 prospects.—General Motors Acceptance Corp.

Displays Catalog Copy in Tire Stations

A Hartford, Conn., dealer believes fully in publicity. Aside from advertising in the daily newspapers he utilizes illustrations from his catalog and displays them in conspicuous places about the tire stations. When a man comes into the station for service he is confronted by the illustration and of course in response to his question the chap is advised by the tire man that the car is good.


Taking Guess Work Out of Coil Trouble

A dealer who had just spent a nice sum of money for a new coil tester put it in the front window and posted a large sign that read "Coils Tested Free." A large number of coils were tested and many were found defective so naturally it was easy to get a job of fixing them up or to sell a new set. At any rate he let the entire community know that he had the equipment necessary to take the guess work out of the coil work.—S. E. Gibbs, Colfax, Iowa.

Protecting Customers Against Car Thieves

It often happens that it is very hard, if not impossible, to identify a stolen car. Engine numbers have been removed or changed and other details of the car altered. As a protection to our customers we stamp number one piston head of every overhaul job with our name and the date. We used $\frac{1}{4}$ steel stamps for this. If we are ever called on to identify one of these cars we can easily do so

if the occasion warrants the removal of the cylinder head or number one piston. Our shop job cars show who owned the car at the time it was overhauled by us.—Jack Beater, Lee County Motor Repair Co., Ford Myers, Fla.



Ginghams and calicoes do more work than silks and satins, but both have their uses

47,000

Dry Goods Stores need trucks for delivery purposes. Their owners and important employees need passenger cars.

There are 47,000 Dry Goods Stores rated at \$5,000 and over.

Of course you can name offhand all such stores in your town—but have you tried to sell them lately?

Make Sales Room Fit in With Season

Of course many automobile dealers cash in on the spring time by using spring flowers in their show room decorations, but live dealers will go a step farther than this and replace any heavy, upholstered furniture in their show rooms with light and airy wicker furniture which will be spring-like in appearance and which will tend to make all people who come to the salesroom realize that it is the time of the year to get outdoors. The proper sort of atmosphere in the sales room is a big help in making sales and the right sort of furniture for the season of the year is a big help in creating the right atmosphere.

Why Not Have Clipping Book for Ads?

People always like to feel that they are doing business with a live-wire, up-to-date establishment. So anything the dealer can do to foster the idea in the minds of the public that he is conducting such an establishment is a good thing for him. In this connection the dealer might put over a new and rather novel promotion stunt by clipping out the ads in MOTOR AGE of the accessories he carries in stock and appliances he uses and by pasting these ads on a large sheet of cardboard and then putting this card-

board on his display counter with a caption reading like this:

"WE ARE UP TO DATE. THE ACCESSORIES WE CARRY AND THE APPLIANCES WE USE ARE ADVERTISED IN MOTOR AGE."

Many of the folks who came into the place of business would be interested in looking at the ads and many sales would probably result from this publicity.

Selling New and Used Cars With Same Ad

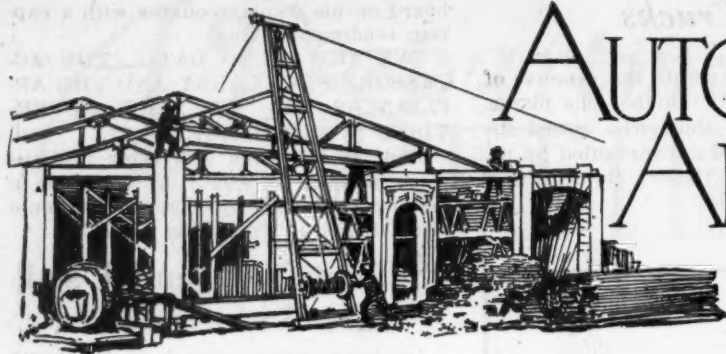
An Iowa agency for a well known make of car has a novel method of letting the public know that the cars it sells satisfy the buyer. Whenever a car of that make is taken in on a trade for a new car, the used car is advertised in the want ad section of a local paper. First a brief description of the used car is given, then at the bottom of the ad only in large type these words appear—HE BOUGHT ANOTHER—, naming the make of car sold. The ad serves the double purpose of advertising the used car for sale and selling new cars, for the man who buys a second car of the same make is a satisfied user.—Lowell R. Butcher, Colfax, Iowa.

Orderly Shop as Means Of Selling Service

Many service stations are equipped with parts tables which have a definite place for each engine part while others pile the parts around any old place until they are ready to reassemble the job. A dealer who had the latest type of motor benches got a picture of one when fully loaded and another of a motor strung around as one often sees them. He used the two pictures in his service letters and explained the many advantages of the modern method. When his customers came in he made sure they had a look at the shop and were convinced the shop was actually kept in proper order.

Keeps Overhauled Axle and Motor Units in Stock

This year we are keeping Ford front and rear axle and motor units overhauled and painted ready for exchange, the original units being made from otherwise worthless trade-ins. The benefits are that the shop keeps busy repairing axle units when not rushed; the customer can be put on the road in an hour from the time of breakdown; tow-in bill is saved for exchanges can easily be made on the road; makes better job for every doubtful part is replaced; there is no haggling over the advisability of trying to get a few more miles out of a worn part. Moreover the job has time to dry from painting which improves its looks. Furthermore there is no crippled car in the way occupying space. The front axle can be really overhauled instead of replacing steering bushings only as in usual where the customer is waiting. Flat rate can be charged for it can be estimated what new parts are needed as a rule.—E. H. Birdsall, Madrid, Ia.



AUTOMOTIVE ARCHITECTURE

Planning and Building Problems

CONDUCTED BY TOM WILDER



Remodeling Old Building An Expensive Job

WE are planning to remodel a building 50 ft. by 110 ft. The basement has been lowered 2½ ft. and the foundation underpinned 2½ ft. Would like a five-room flat on the second floor front with a paintshop in the rear, reached by an elevator. On the first floor we would like to use the south front for an office and the north front for a showroom, the repairshop to be in the basement in front. There will be big windows on each side of the archway for light in the basement. In the basement the first two pillars will be 24 ft. from the front with one row of pillars down the center. Could you give us an idea of the probable cost of putting in these three floors and installing a steam heating plant or pipeless furnace?—Howe's Transfer & Storage Co., Helena, Mont.

We are not very enthusiastic over your project. Generally when one has finished remodeling an old building of this sort almost enough has been spent to build a new one and the result is only a makeshift building which neither attracts business by its appearance nor is convenient or suited to its new use. The basement is not a very good location for your repairshop unless there is more opportunity for light than can be gotten through the front windows. They are all right but will not distribute light more than 20 ft. back, leaving the rest of the basement in darkness. If there is an alley along one side so that windows may be cut in above grade they will supply light. The expense of cutting through those 24-in. stone walls would be prohibitive.

You will get much better results from the post arrangement we show than from a row through the center. The center should be free for aisle space while the posts will fit nicely between each three cars at the sides, causing little inconvenience.

It is impossible to make an estimate on remodeling work of this kind. Contractors will not, as a rule, figure on it as it invariably goes beyond the most exaggerated calculations. The unexpected is always happening; things turn up that are not known of until they are uncovered; parts that are intended to be used again are broken, etc. If you get a local builder to study the building after you have your plans complete he can give you a pretty fair rough estimate. A local contractor likewise will give you a price on the heating job. A furnace will cost much less than steam but is not as desirable.

The cost of remodeling this old building into one suitable for a motor car business would be almost as much as that for a new building and could not be made very attractive in appearance. The charge for cutting through these 24-in. stone walls would be excessive



No. 318

STORAGE NOT RECOMMENDED IN NARROW BUILDING

We are planning to put up a building on a lot 40 ft. by 90 ft. for the repair of all makes of passenger cars at first. We may specialize later.

Our vulcanizing and machine work can be done outside conveniently. We wish to concentrate on repairing, selling only really necessary accessories and doing just enough storage to keep our overhead expense down. We will give special attention to cars driven by ladies.—Arnold F. Schneider, 5916 Fisher Avenue, Detroit.

You are somewhat handicapped in carrying out the campaign you propose by dimensions of your building. If you contemplate catering to the trade of women, you must keep the approach, entrance, office, etc., in apple-pie order

and this is always hard to do in limited space.

When a woman drives in to leave her car she must have room to get out without having to squeeze between other cars, risking her white skirts on the mud and grease with which they may be smeared.

We show a large open space just inside the entrance for the purpose of making adjustments, shooting trouble, etc., and this should always be kept clear, clean, and inviting.

You will no doubt, find that you have no space for storage and that cars stored will be more in the way than the return will warrant. Your space is too narrow to store without congestion and trouble getting in and out, and you will probably

Automotive Architecture

IN this department MOTOR AGE aims to assist its readers in their problems of planning, building and equipping service stations, garages, dealers' establishments, shops, filling stations, and in fact any buildings necessary to automotive activity.

When making requests for assistance please see that we have all the data necessary to an intelligent handling of the job. Among other things we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated, and how large it is expected they will be.

Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repairshop.

And how much of an accessory department is anticipated.

be better off by avoiding it as far as possible.

If the location permits windows at the rear the skylight is not essential, but would be valuable in any case.

No. 320

STORAGE GARAGE WITH LARGE ACCESSORY STORE

Please publish plan for a storage garage with large accessory and Ford parts store and plenty of stockroom space. We also want a tire repairshop in front but no machine shop. The building will be constructed of 4 by 8 by 12 hollow tile and the front at least will be finished in stucco. The lot extends through the block with entrance on two streets.—Lew McDaniel, 804 Commercial Avenue, Cairo, Ill.

Our plan is drawn about as shown in your suggestion but we are of the opinion that unless you have an enormous accessory business your store is going to be larger than necessary. However, you may be jobbers or wholesalers and need plenty of room, and at any rate, probably know your requirements.

If you plan to truss your roof, which is advisable, especially in the rear section where a post arrangement is difficult, you will need some sort of reinforcing for your 8 in. hollow tile walls. This may be obtained by building a flat 6 in. by 12 in. plaster concrete against the wall where each truss rests or by distributing the weight over three or four feet of wall surface by concrete insert at the top. The latter would be easier

Stucco Used for Attractive Building Front



PLAN 320

The base of the wall is of red vitrified brick set flush or slightly ahead of the stucco surface. A row of headers in the same red brick is used at the top and above the windows. Red or green glazed tile would be attractive above the entrance

to do. Simply leave an opening three or four feet long at the top of the wall where the truss is to rest and fill in with concrete. Two or three small reinforcing bars at the bottom are an advantage.

Our elevation shows what can be done with stucco in making a good looking front. The base of the wall is of red vitrified brick set flush or slightly in advance of the finished stucco. A row of headers in the same red brick is used at the top and a row of soldered (brick on ends) across above the windows. Some red or green glazed 6 in. tile such as used

for fireplaces is inserted for decoration above the entrance.

The same elevation could be used on the other street by simply changing the horizontal proportions, eliminating the small doors, etc. The entrance section could be the same and the end piers the same also.

Thirty Foot Space for Service Shop

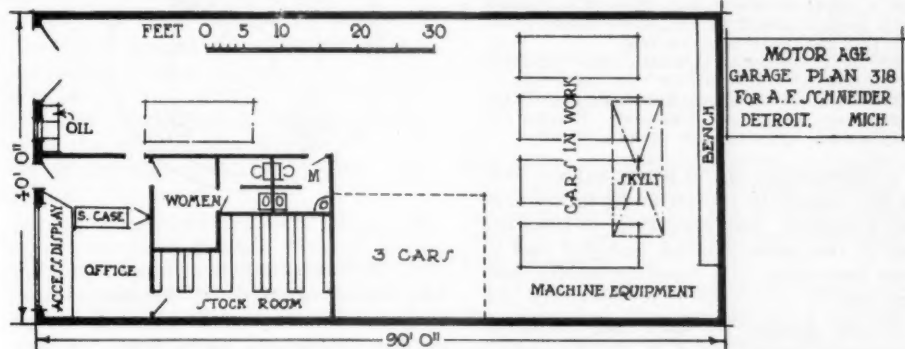
I am going to build a repairshop this spring on a lot 30 ft. by 120 ft. What do you think about building an automobile repairshop in such a small space? Service work and battery charging is all I expect to do.—Joe W. Glenn, Macon, Ill.

There is no reason why 30 ft. space will not make a perfectly usable shop. You cannot, however, handle storage or have any showroom for cars, although you might fit up an accessory display in the front window.

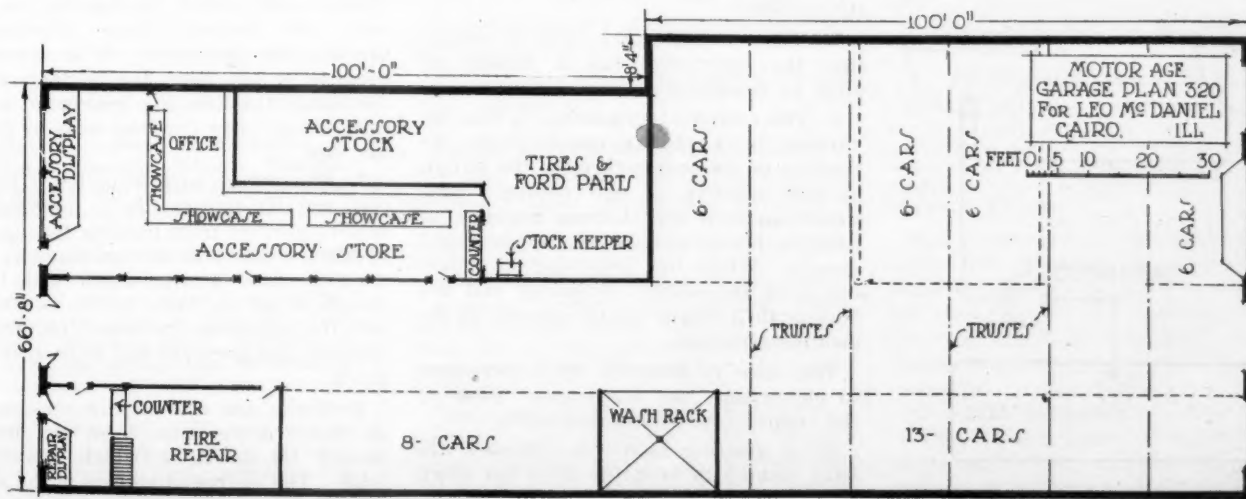
Your best arrangement would have a narrow 8 ft. driveway along one side wall, placing the cars diagonally along the aisle and thus leaving a fair working space equipment and battery shop would be at the rear.

The greatest difficulty in so narrow a building is getting cars out. They will have to be backed out, but since it will not be often this should not be a serious handicap.

Too Narrow for Storage of Cars



Profits resulting from storing cars in a building this narrow would be offset by the general inconvenience caused by crowding of other departments



The above plan is for large storage capacity with an accessory store carrying a large stock

The Readers' Clearing House

Questions and Answers.

CONDUCTED BY ROY E. BERG

Technical Editor, Motor Age

Some Interesting Electrical Questions

Q—What causes the positive battery terminal and post to corrode? What is the name of this substance? Give remedy how to avoid and best method to clean.

2—Give parts water and acid used in a storage battery cell.

3—What is really meant when a cell tests 1275?

4—Does the positive or negative side of battery receive the charge from the generator? Why do they undercut the mica on the generator commutator? Why do they never undercut the mica on commutator on the starter motor?

5—Why should one never allow the liquid in the battery cell to expose the plates? Explain dangers.

6—What is a relay, its uses, is it necessary? If so, why?

7—Explain why Delco uses little coiled resistance on porcelain disk in ignition systems, as on Buick, Cadillac, etc. What is its purpose and use?

8—Publish diagram of the Delco generator on Buick. Give source of current from brushes to battery. Explain use of all three brushes, and especially define the third brush—why it is thinner than the other two. Explain how moving third brush one way increases the current or rather gives a higher charging rate and the other way decreases it.

On a Buick, for example, how is the arrangement so only a 2-candlepower 6 to 8 volt bulb is used in the dash and 27 c. p. 6-8 volt in the headlights? What happens when you turn on the dimmer lights? What makes them dim?

9—Why should ammeter cutout a 12 amp.? What causes this? Why not 10 or 14?

10—What should be the charging rate on a 12-16 volt Dodge? What does the fuse on top of the generator-starter control? Explain its use in full.

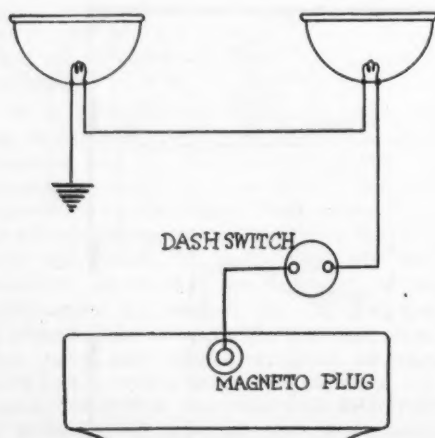


Fig. 1—Proper connections for Ford headlights

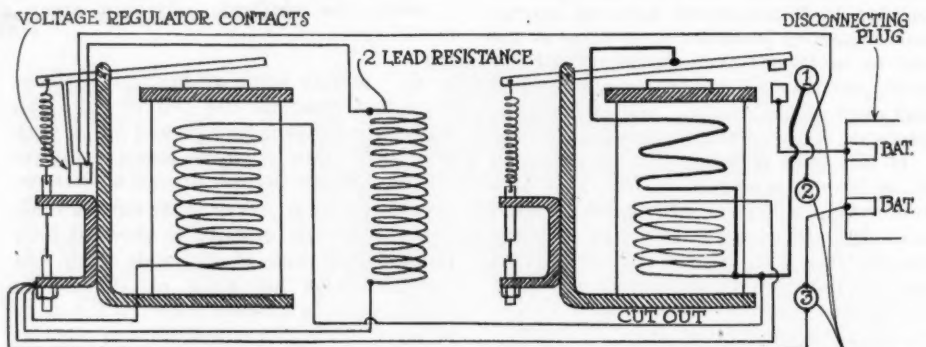


Fig. 2—Diagram showing circuits of Bijur regulator used on Packard trucks

11—Why does the Delco on a Cadillac use a dual breaker bar system? Should both points break at the same time; if so, what is the best way to test?

12—Explain what is meant by "capacity 80 hours."

13—Publish wiring diagram of Bijur regulator used on Packard trucks.—A Subscriber, Huntington Beach, Calif.

1—The action of the heavy battery acid on the copper in the terminal forms copper sulphate. The remedy is to keep the top of the battery clean and dry and to coat terminals with vaseline before putting on.

2—By adding to each ten parts of chemically pure sulphuric acid, with a gravity of 1.835 and 15 8-10 parts of distilled water by volume you obtain the ordinary battery electrolyte with a gravity of 1.400.

3—When a cell tests 1275, it means that the electrolyte has a density of 1.275 as compared to pure water.

4—The common explanation is that the current in a circuit passes from the positive of the source through the circuit to the negative of the source. This would make it travel from negative to positive inside the source of electrical energy. While the generator is charging, it is the source of energy and the battery then would receive current at the positive terminal.

The mica is undercut on a generator to compensate for the greater wear of the copper commutator segments.

On a starting motor the brushes are hard enough to keep the mica cut down flush with the copper.

5—The parts of a battery plate not cov-

ered with electrolyte cannot function, and being exposed to the air, become useless. It also throws all of the work on the remaining parts that are submerged, overworking and damaging the entire plate.

6—By relay, we assume you mean a cutout relay, which is installed to prevent the battery from discharging through the generator. It is necessary because if not used the battery would discharge through the generator whenever the car was running slow or standing idle.

7—The coiled wire is called a ballast coil and its purpose is to prevent excessive current from passing through the primary winding of the ignition coil. The wire is made of iron which will, if the switch is left on while engine is idle, get hot, its resistance increases, reduces the current and prevents coil from being injured.

8—There are several different models of Delco generators used on Buicks. Kindly let us know which model you wish. The source of energy is the armature and the path of the current is from the positive main brush through the ex-

ternal circuit and back to the negative main brush. The third brush is connected to one end of the shunt field winding and carries only the field current. Disregarding the speed of the armature, the output of the generator is proportioned to the field strength.

The field strength is proportional to the current in the field windings and the current is proportional to the voltage across the field. The field winding is connected from one main brush to the third brush. Each coil of the armature is a source of energy and produces a certain voltage. Moving the third brush away from the main brush, to which the opposite end of field is connected, increases the voltage across the field and thereby through the steps above increases the output. Moving the brush the opposite way produces the opposite effect and decreases the output.

8—The current in any circuit is always equal to the voltage divided by the resistance. A 2 c. p. 6-8 volt lamps has a high resistance and lets but a small current through. The head lamps have a lower resistance and therefore at the same voltage allow more current in the circuit and give more light.

When you turn on the dimmers you connect a resistance coil in series with the head lamps which reduces the current in the circuit and thereby reduces the brilliancy of the lamps.

9—Under just what conditions does the ammeter cut out? Does it happen while generator is charging or engine idle and lamps lit? What particular car have you in mind?

10—The charging rate should be approximately 8 amp. The fuse on top of the generator is in series with the shunt field. It is used to protect the generator should the voltage rise due to an open or high resistance in the battery circuit.

11—On the earlier Cadillacs one set of points were used for the dry cell ignition, the other for the storage battery or "M" ignition. These were not set to open at the same time.

The later types used two sets of points to equalize the wear and they should be set to open as near the same time as possible. The usual method of adjustment is to turn engine until lobe of cam

Connections for Installing Side Lights on a 1917 Studebaker

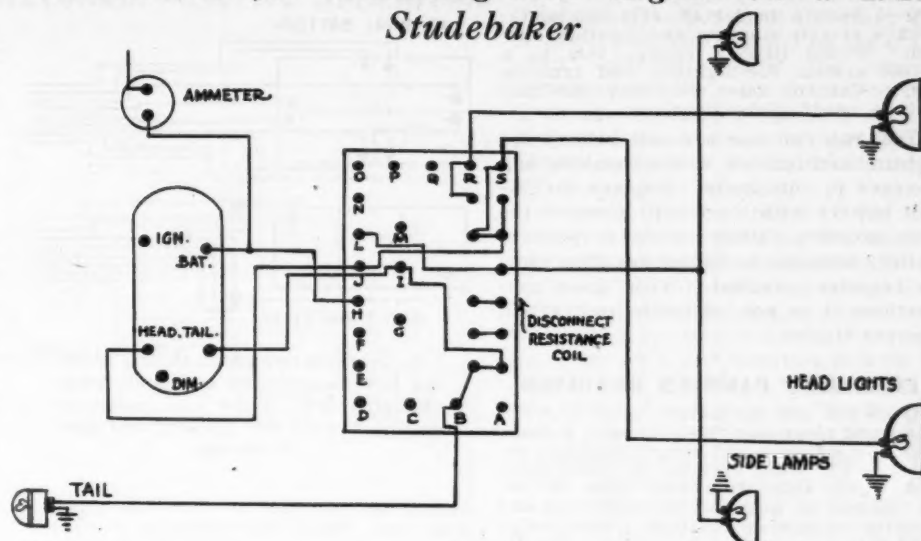


Fig. 3

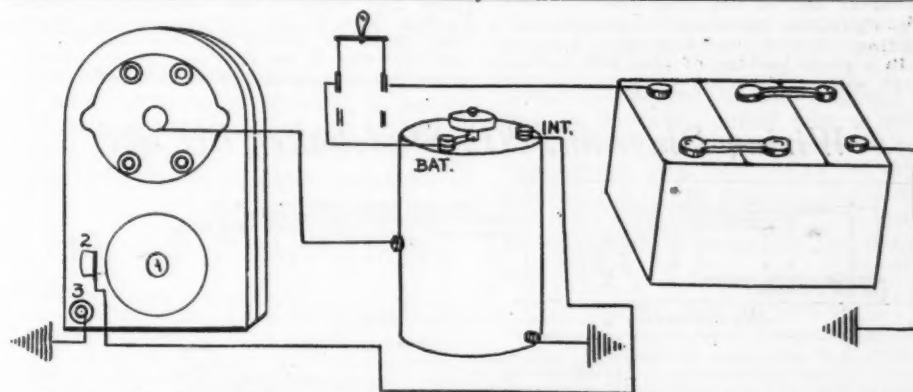


Fig. 4—The "grounds" may be connected together with wire. Consider terminals 2 and 3 as interrupter contacts and connect same as modern battery system. High tension coil terminal to be connected to center of upper distributor

has moved the arms the farthest possible distance. Then while in this position, the stationary points are adjusted until there is a gap of .020 in. between each pair of points

12—The ampere hour is the unit used for measuring the capacity of a storage battery. Thus, if a battery discharged continuously at 10 amp. rate for 8 hours, its capacity would be 8 hours times 10 amp., or 80 amp. hours. The capacity varies inversely as the rate, so that the manufacturers use some stated rate for determining capacity.

13—Fig. 2 shows all circuits of the Bijur regulator.

EVERETT SIX WIRING DIAGRAM

Q—Can a storage battery be used for ignition without installing a special distributor on a 1911 or 1912 Everett 6 with a low tension Splitdorf magneto? If so, publish wiring diagram.

2—Give bore and stroke of this engine.

3—Show method of installing Delco generator now being used on the 1919 Nash car on this Everett. Generator to be driven with fan belt.—J. C. Krohn, Langdon, N. D.

Yes, you could connect the storage battery in the circuit to replace the dry cells originally used. To prevent any injury it would be necessary to use not over a 6-volt battery and to put in series

with the battery one of the standard 6-volt ignition ballast spools commonly found on modern battery ignition systems. The diagram is shown in Fig. 4.

Should the coil be in poor shape, it would be practical to install a modern 6-volt battery system coil, using only the breaker points and distributor of the magneto, as shown in the diagram.

2—The bore and stroke of this engine is 4 by 4¼ in. The model number is 6-48.

3—Mechanical bracket construction.

FORD LIGHTING CIRCUIT

Q—The bulbs in the lights of a Ford car burn out very quickly. New plugs, new wires, a new switch and new 18-24 volts bulbs have been installed, but the condition is not remedied.—W. M. Wesley, Peabody, Kansas.

You evidently have an old type Ford using the magneto for lighting. The magneto gives from 18 to 24 volts at a fair road speed, but if in extra good condition will go a little higher. Check the wiring and make sure that the lamps are connected in series as shown in Fig. 1. This is the usual way of connecting and is the better, except, of course, if one lamp burns out the other will go out. You have perhaps in rewiring grounded each lamp.

The Readers' Clearing House

THIS department is conducted to assist Dealers, Service Stations, Garagemen and their Mechanics in the solution of their repair and service problems.

In addressing this department readers are requested to give the firm name and address. Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been asked by someone else and these are answered by reference to previous issues. MOTOR AGE reserves the right to answer the query by personal letter or through these columns.

Changing From 24 to 6-Volt System

Q—I have a model 43—1913 Oakland—with a 24-volt starting and lighting system. Would like to change this to a 6-volt system for lighting and ignition only. Can the same generator and cut-out be used?—Subscriber.

Yes, you can use a 6-volt battery for lighting and ignition without making any changes in equipment. Replace the 24-volt battery with the 6-volt. Connect the four positive battery wires to positive battery terminal and from negative wires to negative terminal. With these connections it is not advisable to try and operate starter.

INCORRECT CADMIUM READINGS

Q—What are the proper gaps between poles and rotor in a "K-W" model T magneto, for advance and retard positions respectively? When viewing the interrupter end which side of breaker cam "R" or "L" should be outward for clockwise and counter clockwise rotation respectively? Which is conventional to consider, the direction of rotation from drive end or interrupter end of any magneto?

2—Cadmium Readings: Sometimes a reading of -.20 volt and plus 2.60 volt with a cross voltage of plus 2.85 volts or more will be observed, whereas the cross

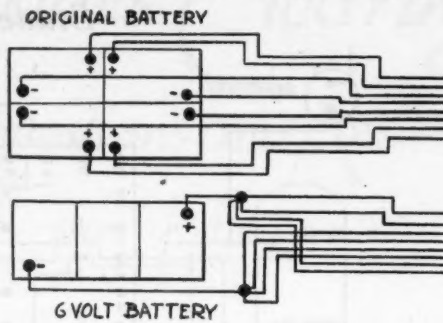


Fig. 5—Diagrammatic sketch showing how connections are made when changing from a 24 volt system to one of 6 volts for lighting and ignition only

should be the sum of -.20 plus 2.60, or plus 2.80. Why this variation since the negative plates are -.20 volt to the standard cadmium, and the positive plates are plus 2.60 volts to the standard? I am seldom able to get a true cadmium reading using a model 38 Weston Duplex meter. Can it be that the meter resistance is so low that the cadmium electrode

is being worked at too great a current density, giving the respective lower voltages of the plates to the standard? In taking the cross readings the larger plate surfaces are able to sustain the true voltages across the plates with the same current density. The cadmium stick is kept hanging on the meter when not in use and is let soak for a few minutes before using. What is the opinion of others regarding this? What is the proper care of the cadmium stick? What about polarization?—Ray Parker, Kingman, Kans.

1—The strongest spark occurs just as the rotor leaves the pole piece. The exact distances are set by the manufacturer when the keyways for rotor and cam are cut into the shaft. The direction of rotation is always determined when looking at the magneto from the drive end. Looking at the breaker end the letters "R" and "L" will appear to be opposite. Thus an "R" or clockwise rotation from the drive end will appear anti-clockwise from the breaker end.

2—Your trouble with cadmium readings is evidently due to the cadmium stick. When not in use the stick should always be immersed in water. After being used and let dry, there is a sulphate formed on the cadmium which varies its resistance and carries a variation in the readings.

Wiring Diagram, 1918 Studebaker Big Six

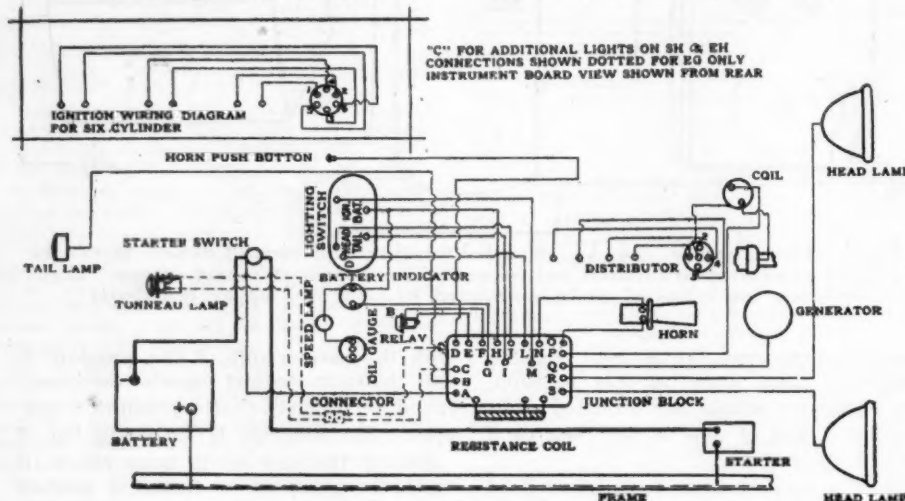


Fig. 6

Wiring of 1917 Saxon—Ward-Leonard System

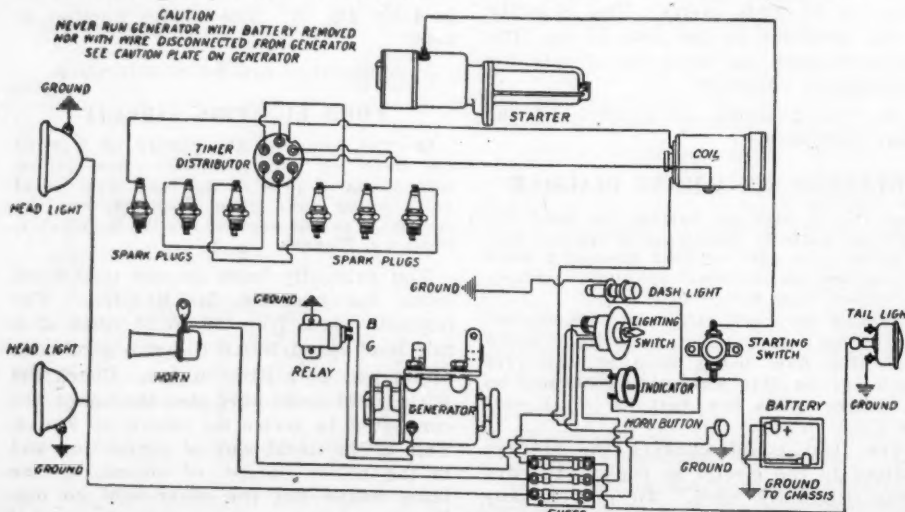


Fig. 7

CHANGING IGNITION SYSTEM

Q—Can an Atwater-Kent type C. A. be used on a Hupmobile 1916 model in place of the one that is on the Hupmobile?—William Haith, Watson, Mo.

Yes, but the new model is of the closed circuit type and for best results would require new wiring and new type coil.

WIRING DIAGRAMS

Q—Publish wiring diagram of a 1917 Saxon Six, using Ward-Leonard starting and lighting system.

2—Publish wiring diagram of a 1918 Studebaker Big Six.—F. C. Traenkle, Youngstown, Ohio.

1—Shown in Fig. 7.

2—See Fig. 6.

WIRING AUXILIARY LIGHTS

Q—Publish wiring diagram of a 1917 Series 18 4-cylinder 7-passenger Studebaker.

2—I wish to install two side lights (small ones), on this car, and arrange it so that I can put the headlights out, but have the tail, and side lights on. What would be the proper way to wire this car to do it? Would the two headlights dimmed use the battery any more than the two small side lights would?

1—The wiring diagram of the Studebaker car is shown in Fig. 8.

2—Dimmed head lamps usually require about the same current as the ordinary side lamps. The exact amount, of course, depends on the system of dimming head lamps and comparative size of head and side lamp bulbs. See Fig. 3.

MAXWELL POWER CURVE

Q—Publish power curve of the 1920 Overland 4.

2—Publish power curve of the 1919 Maxwell 25.—H. L. Hodge, Chief Machinist, U. S. Navy Recruiting Station, Indianapolis.

1—A power curve of this engine is not available, but the engine develops about 27 hp.

2—A power curve of the 1919 Maxwell 25 engine is shown in Fig. 9.

Wiring Diagram 1917 Studebaker—Series Seventeen

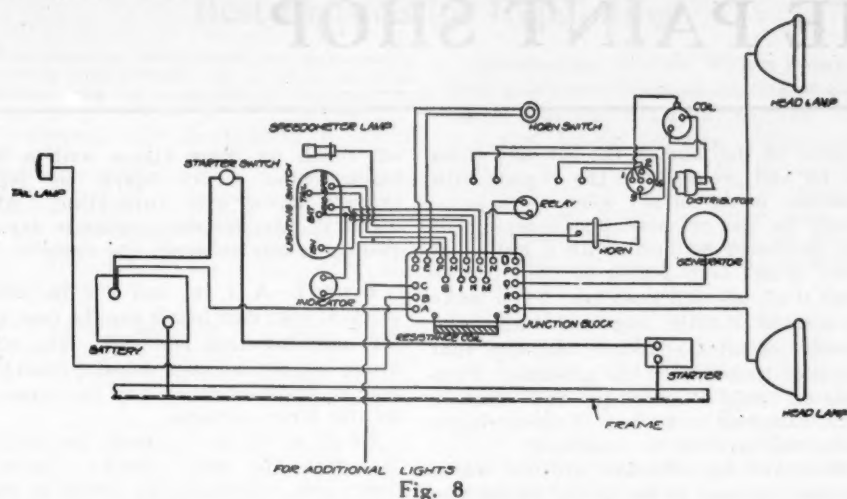


Fig. 8

ENGINES

PISTON SLAP

Q—The engine in a 1919 Cole which has been driven about 14,000 miles has gradually developed a noise which in sound is much of the nature of a tappet knock. A close adjustment of the valve tappets, however, does not seem to have any effect. The connecting rod bearings are in good shape and need no taking up. The compression is good and there is not enough oil pumping to foul the plugs. I have noticed that when the cylinder heads are removed and the engine is turned over with the starter, considerable oil is thrown on top of the pistons.—Paul Post, Moulton, Ia.

From the information given, the trouble appears to be nothing more than piston slap. It is quite possible that the wrist pins or bushings are slightly worn and a slight knock is present as a result. The use of an excessive amount of oil is probably due to improper clearance of the pressure proof rings and can be eliminated by the following method. The upper or smaller ring shown in Fig. 10 must have .010 in. clearance between cylinder wall, or .020 in. smaller in diameter than the cylinder bore.

It would be advisable to install the new constant clearance pistons that are used in the Cole engines at the present time and we are sure this difficulty will be overcome.

CHANGING THE MANIFOLD

Q—The intake manifold on the model 1911 or 1912 Everett 6 is on the right hand side, but the carburetor is on the left side. Can this manifold be cut off and the carburetor fitted to the left side? That will, of course, bring the carburetor on top of the magneto, but there should be no harm in that.

2—Give the bore and stroke of this engine.—J. C. Krohn, Langdon, N. D.

1—The Everett car has not been in production for several years and there is very little information pertaining to this car that is available. It is not advisable to place the carburetor directly above the magneto unless some means is provided for preventing the gasoline from dripping down on it. There are two ways in which the carburetion can be improved a great deal. The air passing

into the carburetor can be tempered by a stove arrangement attached to the exhaust pipe, but this alone will not insure good carburetion. A hot spot such as the Losee protector meter manufactured

Maxwell Power Curve

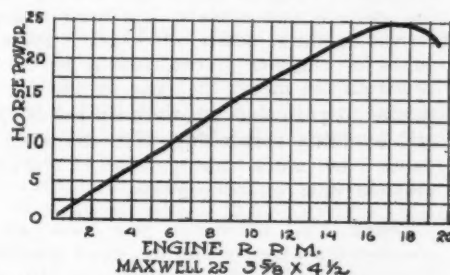


Fig. 9

at Hebron, Ill., can be installed and ought to give highly satisfactory operation.

2—This engine was a 4 by 4 1/4 in. bore and stroke.

TIMING PAIGE ENGINE

Q—Explain valve and ignition timing for 1914 Paige.—Robert G. Horn, Los Angeles, Calif.

The valve timing of the 1914 Paige is as follows: Intake opens 9 deg. and 40 min. after upper dead center and closes at 40 deg. and 26 min. after lower dead center. The exhaust valves open 51 deg. and 18 min. before bottom dead center and close at 11 deg. and 40 min. after top dead center. In explaining the timing of the engine we shall assume that the timing chain has been removed. Turn the flywheel of the engine until pistons No. 1 and 4 are at top dead center. This may be determined by observing the markings of the flywheel relative to the indicator attached to the arm of the crankcase at the left of the flywheel.

It will be noted that the sprocket attached to the crankshaft is marked O and A; the camshaft sprocket is marked

O and the magneto sprocket is marked A. Turn the camshaft until the mark O is in direct line with mark O on the crankshaft sprocket. Turn the magneto sprocket until the mark A lines up with A on the crankshaft sprocket. If the chains are then replaced without disturbing the position of the shafts the engine will be properly timed.

In explaining the timing of the ignition we shall assume that the magneto has been uncoupled. Open all of the pet cocks on top of the cylinders except No. 4. Turn the engine in the direction of rotation until a resistance is felt. Next open No. 4 pet cock and continue to turn the engine until the dead center line for No. 1 and 4 cylinders on the flywheel comes opposite the indicator. Next turn the magneto shaft until the distributing brush points to the lower inside segment. This position may be readily observed by removing the distributor plate.

The flexible coupling can then be bolted together. If the wires have been disturbed connect the wires from the upper outside terminal post on the distributor to No. 1 spark plug; the wire on the lower outside post to No. 3 plug; the one on the lower inside post to No. 4 plug and the remaining one to No. 2 plug. Connect one wire from the switch to the breaker box of the magneto and ground the other wire leading from the switch to the frame or some part of the engine.

NOISY TIMING GEARS

Q—Give remedy, if there is one, for hum in the timing gears on Model O, 1920 Hudson speedster. Would the installation of a fiber intermediate gear be advisable?—B. J. Huff, Benedict, Neb.

If the gear hum referred to emanates from a new set of gears, it will work out with two or three hundred miles of running. If the gears have been seen considerable service, then the setting has been too tight. The remedy is the installation of a new set of gears allowing .002 in. back lash.

The installation of a fiber gear would not be advisable because the car is not designed to accommodate one. The service department of the Hudson Motor Car Co. advise their experience with the various types of gears resulted in the adoption of the metal type. We think it would be more satisfactory to install a set of the standard gears with which the car is equipped.

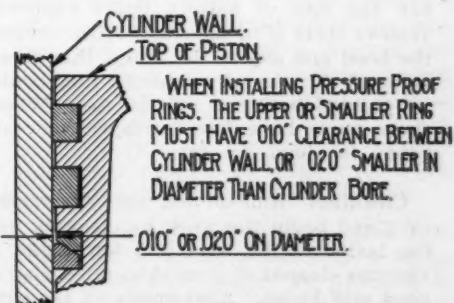


Fig. 10—Piston clearance dimensions

IN THE PAINT SHOP

Inexpensive Repainting Job

THE quickest and cheapest way to repaint an automobile is to give it a coat of solid covering air-drying enamel. These materials can be had at nearly every paint store in a small variety of colors, and where luster and fine surfacing is not essential they provide an adequate means of reviving the old paint coats.

A color should be selected that has little contrast with the old work on the car, for it must cover well in one coat, and this cannot be accomplished if there is too strong a contrast. If more than one coat is applied in order to obtain covering, time is lost in the operations. Fine surfacing and good luster is not to be expected, and where required, this method of repainting should not be followed.

If a car is black it can be painted black, dark green, dark red, dark blue, etc., as all of these colors will cover well in one coat if properly applied, but if the car is black it cannot be painted with one coat of white or cream because these colors will not cover the black well in one coat. In such a case the surfaces should be given one or more coats of ground color and the enamel then applied over this, but as all this makes for extra labor and expense it is better to use a color that will cover well in one coat.

For the purpose of showing how the enamel can be handled, let us assume that you have a black touring car and that you wish to repaint it with the same color and perform the work with a minimum of everything. You would proceed as follows:

Stripping.—The first thing to do is to remove such parts from the car that can be worked on better if off the car, or that will make the work on the car itself more accessible. Put the top up and take off the top support irons at the corners of the tonneau that serve as a support for the top when down. Remove the curtain fasteners on the outside of the body, license plates and door handles. If there are any tool or battery boxes exposed, remove them if in the way. Also remove the hood and any of the lamps that seem to be in the way or as though they could be painted better if off the car. When these parts have been stripped you are ready to clean the car.

Cleaning.—Run the car onto the wash-rack and begin the work by cleaning out the inside of the body and top, using a vacuum cleaner if available, otherwise a good stiff brush. Also brush off the outside of the top, or if it is very dirty hose it off and scrub with a stiff brush.

Hose off the mud on the car, and clean the oil and grease from the chassis with gasoline, using an old worn down paint brush for the purpose, and scraping off any hardened material with a knife. If there is any body polish on the surfaces wash it all off with gasoline. Then make up a suds of mild soap and water and sponge off all the grease and dirt that has been loosened by the gasoline. Then hose off with clean water and chamois dry. Likewise clean any of the stripped parts that are to be repainted.

When you have finished with the washing run the car to the place where you intend painting it and jack it up, placing wood blocks under the axles for supports. If the wheels are wire or disk, remove them with their tires; if wood, remove the tires and rims. Strip the tires and rims from disk or wire wheels but it is not necessary to remove the tires from the rims. If the tires are clincher type, leave them on and place papers or cloths over them so that they will not be soiled during the painting.

Sanding.—Use No. 0 sandpaper on the body and stripped parts and No. ½ on the chassis and wheels, and sand them clean—sanding down all rough spots, edges of chipped places, rusted or corroded on the metal, etc., and paying particular attention to the work on the body and avoiding scratching with the sandpaper as much as possible. When finished dust off thoroughly.

Touch Up.—Wherever you have encountered a bare spot on the wood wheels or other wood parts, touch it up with a thin solution of orange shellac. If there are any bright spots of metal showing where the paint coats have been chipped

off, touch up these places with a little black color (ivory black in japan) thinned down with turpentine. Allow about 15 min. for these spots to dry and you are ready to apply the enamel.

Enamel.—A 1 in. and 2½ in. double thick badger hair brush are the best tools for applying this material. The small brush should be used around mouldings and on small surfaces, and the large one on the large surfaces.

Do all of the parts inside the car first, including the door checks (edges of doors and corresponding edges in body) and then do a door. If the material looks all right on the door you can feel sure that you are making headway. Do the other three doors, and then the cowl—doing a side, then the top and other side. Then do the small panels under and between the doors on the side, then the side panel back of the rear door, then the rear panel and on around the other side to where you started. Do not over-brush the enamel when applying it, but get on a uniform coat free of sags and runs and then get away from it and let it flow out into a smooth film. The stripped parts can be finished next and the work done on a bench, hanging the parts up to dry if it can be conveniently done. Then do the wood wheels and then the chassis. Allow time for drying as shown on the can of material. The room where this work is done should be dry and safe from draughts, and the temperature should be at least 75 deg.

Fit Up.—When the enamel is dry replace all of the stripped parts, and touch up the bolt heads, etc., with a little of the enamel. Shower with cold water to help harden the enamel.

Japanning Work Profitable

I expect to enter the garage business and will do battery work and automobile japanning, and would appreciate a few suggestions from you.—Reader.

By japanning we infer that you mean baked-on enamelling. There are two types of varnish used in japanning—one is classified as a baking-japan and the other as a drying-japan. In using a baking-japan the article is baked in a hot oven and a hard and glossy coating thus obtained; in using the drying-japan the article is not baked as the material dries rapidly and to a fairly hard surface when simply exposed to the air—its drying action being hastened by the addition of lead and magnesia compound.

Baking japans or baking enamels are the materials used on automobiles where extra hard and durable surfaces are desired, as on the fenders, splashboards, etc., but the air-drying materials are also used where the costlier baking operation is not desired, and where the color will permit.

The operations of baking such materials on the parts of an automobile that can be removed and placed in an oven for the purpose are not complicated nor difficult to learn. However, a detailed explanation of the work would take up more space than is allowed here. You may rest assured that the work is very profitable, and if you turn out good work you will be able to get all of it that you can handle. The prices vary according to the finishes desired. Some firms here enamel the fenders, splashers and hood of a Ford for \$20, while almost as much as this is charged for enameling one fender on the more expensive and particular jobs. We refer here to baked-on finishes. Wire wheels can also be finished with a baked-on enamel. These baked-on finishes will produce a surface of great hardness and durability, and it is this characteristic that makes them so popular with the car owners.

Cleaning the Car and Removing Old Paint— Best Brushes for Repainting

We have an ideal room for automobile painting and would like to have the following data on automobile painting, in detail:

- 1—Cleaning and methods of removing old paint.
- 2—Undercoats and how applied. Where can material be obtained?
- 3—Finishing coats and how applied. Where can material be obtained?
- 4—Best kind of brushes for each operation.—Mishawaka Auto Specialty Co., Mishawaka, Ind.

1—Cleaning the Car. (Wash Rack.) Having stripped the car, run it onto the wash rack and hose off the mud. Clean the upholstery and inside of the car with a good stiff brush, or a vacuum cleaner; if an open car style of top, brush it out well on the inside and outside; and if the outside is very dirty hose it off and scrub with a stiff brush. Then clean off the chassis with gasoline (kerosene may be used for cleaning a job that is to be burned off, but is too greasy where only repainting is intended), using a gasoline brush or an old worn down paint brush for the purpose—scraping off any hardened grease or dirt with a putty knife. Next make up a suds of soap and water and sponge off all of the dirt that has become loosened by the gasoline—then hose off.

Hot water may be used where the job is to be burned off afterwards—as hot as desirable; but where repainting only is intended it should not be so hot as to soften any of the paint coats, and where revarnishing only is intended the water should not be more than luke-warm. After washing a job that is to be repainted or revarnished, hose off thoroughly with plenty of water, and make sure that all soap has been removed from the surfaces. The stripped parts can be similarly cleaned where necessary. Sponges and chamois used in washing should not be used elsewhere, and it is best to have one set for use on the chassis, which is always the greasiest, and another set for use on the body parts.

Cleaning preparatory to burning-off need not be so thorough as when done before repainting, etc. If there is any body polish on the surfaces wash it off with gasoline preparatory to the washing with soap and water, whenever the job is to be handled without burning off.

Cleaning With No Wash Rack Available. In this case you would clean out the inside and top as shown, and then scrape off the caked mud and grease with a putty knife. If the job was to be burned off, the paint remover could be depended upon for removing any remaining grease or dirt.

If burning off was not intended, the surfaces should be further cleaned with gasoline on the chassis, etc., and if necessary with a warm water suds on the body—doing the work from a pail—and then sponging off with clean water. The sanding that the surfaces will receive must free them of any remaining dirt. Wash off all body polish with gasoline.

Cleaning the Chassis With a Spray. A very quick and effective method of cleaning is that where a spray is used. Such a device cannot be used without compressed air, but where this is to be had a simple spray nozzle can be rigged up with a few pieces of brass pipe, patterned like that of a garden or orchard spray and the cleaning solution thereby sprayed onto the car.

A mixture of hot water, soap and kerosene can be used in cleaning a chassis for burning off; while for repainting, warm water, gasoline and soap would be used first, and clean water afterwards. There are many cleaning solutions to be had on the market that can be advantageously used in cleaning a car preparatory to burning off, but most of them are too strong for use otherwise.

2-3—Materials for use in automobile painting can be had from: Valentine & Co., Chicago; Murphy Varnish Co., Chicago; Chicago College of Auto Painting, Chicago.

For Undercoating you should have a good primer that is suited for use on both wood and metal, roughstuff, sanding surfacer and stiff putty. Your colors and color varnishes can be stocked in the most popular shades, and the odd ones can be made as desired with the color and rubbing varnish. A free working and flowing finishing varnish will be best suited for your purpose, especially for body work, but for chassis work you can use one that is a little heavier bodied. Spar varnish can also be used on the wheels or other small surfaces where there is no danger of laps or runs showing.

The matter of application would require a volume. We shall at an early date publish an article describing a cheap job of repainting—the kind that the ordinary garage man is interested in for reviving the paint coats on some old car before offering it for sale.

4—Selection of Brushes. Brushes are cheapened in a way so that it does not show. Good hair is placed in the outside and the poor grade is placed at the center. In the best grades, the hair will be found uniform from the center to the outside. The "filled" brushes are not bad ones to work with, but the "pure" ones will outwear them, and as brushes improve with use, it is not desirable to have one start wearing out just at the time when it should be getting good.

It takes some little time before the badger hair finishing varnish brush can be brought to its maximum efficiency, and properly cared for, it should last for years. So it would be nothing but false economy to buy anything but the "pure" badger hair brush for such a use. Brushes that are used for finishing must be absolutely clean, and as this is a condition that can be acquired and maintained only by use and care, these brushes improve in value and usefulness in direct proportion to the care and use

given them. Nearly all auto painters who make a specialty of finishing, that is, applying the finishing varnish, own their own brushes and they accord them the very best care and attention.

The following table will show the types and sizes of brushes used in automobile painting:

BRUSHES FOR CAR PAINTING

Primer—2½-in. ox hair or soft bristle for large surface; 1-in. ox hair or soft bristle for small surfaces.

Filler—2-in. flat bristle; 1½-in. oval bristle.

Color—(Body) 1-in. camel's hair for small places; 3-in. camel's hair for large panels. (Chassis) 1½-in. camel's hair.

For the automobile colors that are applied in thicker coats like the whites, creams and grays, a 1½ in. ox-hair brush can be used.

(Touch-up) ½-in. camel's hair for bolt heads, lugs, etc.

Color Rubbing Varnish—(Body) Badger hair, double thick, 1 in. for small places. Badger hair, double thick, 2½ in. for large panels. (Chassis) Badger hair, double thick, 1½ in.

Finishing Varnish—Set of three same as for color rubbing varnish. For touching up the finished job with an air drying enamel, irons, running gear, etc., a small brush known as a sign painter's brush is a handy tool. It is a ½ in. ox-hair with the hair about ¾ in. long, and has a long handle. A 1½ in. bristle or ox-hair brush will also be required for enameling the rims.

Striping, Monograming, Lettering—Sword stripes, sizes No. 2, No. 3 (stripe up to ¼ in.). Broad stripes (stripe ¼ in. to ½ in.). Monograming and lettering pencils, assortment.

BRUSHES FOR TRUCK PAINTING

Truck work is harder on brushes, and a high-class finish is not so essential. The surfaces are rougher and do not call for so high grade a tool.

Primer (Body)—2 in. bristle for any kind of primer. (Chassis)—1½ in. bristle for any kind of primer.

Filler—2½ in. bristle body.

Color (Body)—2½ in. ox-hair. (Chassis)—1½ in. ox-hair.

Varnish (Body)—2½ in. bristle (one set for color rubbing varnish). Chassis—1½ in. bristle (one set for finishing varnish). You want a bristle brush for this work because larger surfaces require a longer working or brushing of the varnish, and the longer it is worked the stiffer it gets. Also the heavier bodied varnishes are used on trucks where so fine a finish is not required. Larger brushes would be required for moving vans, or a number of men could work on a panel at the same time.

Preparing a Brush for Use. The usefulness of a brush depends to a large extent upon the manner in which it is "broken in." Hair, as you know, is not solid, but has a small tube running up the center.

The Accessory Show Case

New Fitments for the Car

Gemco Rear Seat Tonn-O-Wings

The Gemco Mfg. Co., Milwaukee, have placed on the market, a new device for rear seat wind protection called tonn-o-wings.

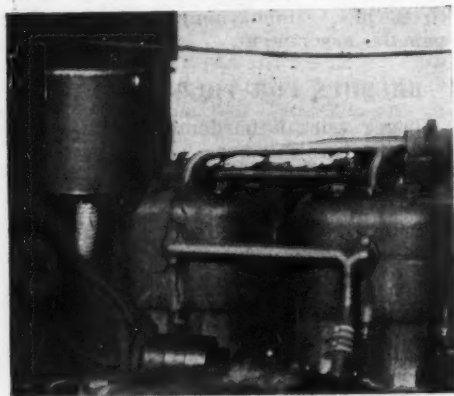
Instead of attaching to the rear of the front seat, they are fastened to the top rest on either side of the tonneau. They are so designed that a 12 in. wing of plate glass can be adjusted to any position desired by the occupants. In this way complete protection from the discomforts usually found in driving is afforded but, nevertheless a conversation can be easily carried on between those in the front and those in the rear seat.

One of the biggest features of Tonn-o-wings is the fact that they can be quickly and easily attached without changing or damaging the car in any way.

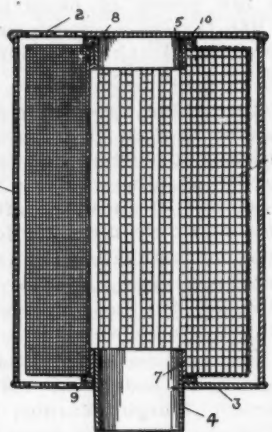
Tonn-o-wings are made in four sizes, ranging in price from \$51 to \$60.

Staynew Air Filter

An air filter has been designed by the Staynew Filter Co., Rochester, N. Y., to completely filter from the air road dust, sand and grit which enters the engine through the air intake to the carbureter, which results in damage to the engine.



Staynew air filter installed on carbureter



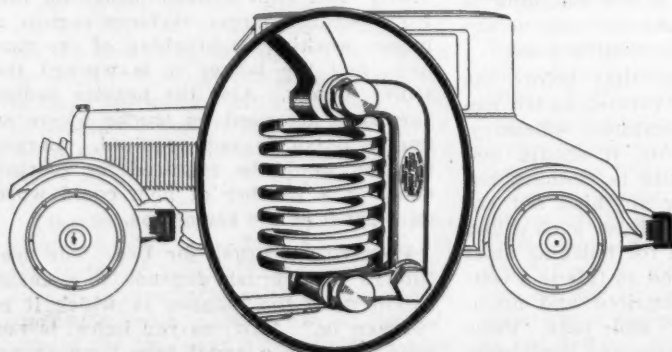
Sectional view of Staynew air filter

The effective filtering area of this self-cleaning air filter is over 500 sq. in. which is over 200 times the area of the largest carburetor intake. Therefore the intake velocity of the air to the filtering service is only one-two hundredth part of the velocity of the intake to the carburetor. The velocity being so greatly reduced, the dust, sand grit, etc., is separated from the air mostly by gravity.

The construction of this device is clearly shown in the sectional view. No. 1 is a metal shell of rust proof material, 2 is the top cover which is removable, 3 is the perforated bottom which permits an outlet for the dust, 4 is a metal tube serving as an outlet for the filtered air, and 5 is a sleeve for centering the filter proper within the shell. No. 6 is a serpentine web of wire mesh covered with felt cloth, 7-8 are metal sleeves to which the wire mesh is fastened and 9-10 are heavy felt washers.

Testalite

The Testalite is used for testing grounded circuits, broken wires, etc., and is equipped with a battery, thus furnishing its own current. It weighs only 3½ oz. and can be conveniently carried in the vest pocket. This tool is not to be used on live wires. The John Hugo Mfg. Co., 213 George Street, New Haven, Conn.



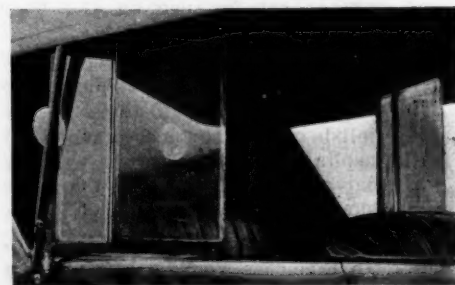
Steel Wings shock absorbers

Steel Wings Shock Absorber

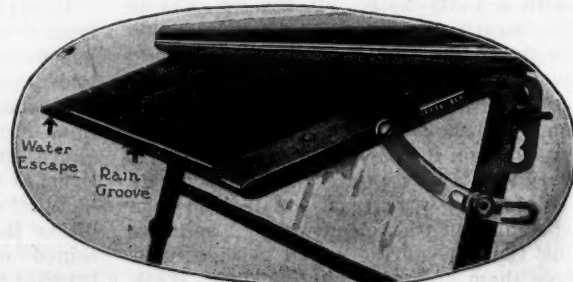
Steel Wings shock absorbers, as can be seen from the illustration, are applied to the rear of the front and rear springs of the semi-elliptic type. A special set is made for the Ford car. The shock absorber consists of two auxiliary shackle links pivoted at the frame horn and at the end of the spring. The connection from each of these links is centered on an oscillating shackle bolt, with a heavy steel coiled spring placed between the frame and leaf spring end. The action of this shock absorber is as follows: When an undulation or bump in the road is encountered the main spring is caused to act and in doing so the shackle link will oscillate backward. In acting backward, however, a compression is caused between the main link and the auxiliary link which compresses the auxiliary spring. This extra resisting effort of the auxiliary spring from its combined lateral oscillation causes much of the shock to be absorbed. The spring is manufactured by the Steel Wings Co., 417 S. Dearborn St., Chicago.

Rain-Sun Shield

The Rain-Sun vision shield is so constructed that it fits any car open or enclosed. It is made high-grade steel and finished in black and green enamel with heavy nicked brass adjusting braces. The rain groove along the lower edge prevents rain from splashing on the wind shield. Manufactured and patented by The Rain-Sun Vision Shield Co., Los Angeles, Calif.



Gemco rear seat tonno-wings



Rain-sun shield for open and enclosed cars

Service Equipment

Time Savers for the Shop

Kwikway Valve Facer

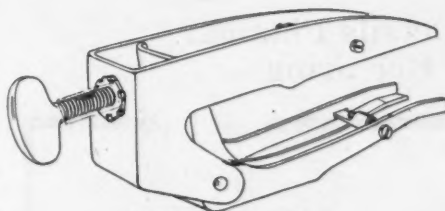
The Kwikway valve facing machine is designed to enable the service man to put his valve grinding jobs on a production basis. By using one of these machines the writer has seen it demonstrated that the valves for a six cylinder engine could be ground in and the engine running after three hours time which included the time to remove the engine head, remove the valves and grind them and reassemble the engine. In using this machine the valves are first ground up giving the valve a high polish. A valve reseater is then used in the valve guide to smooth off the seat slightly, after which a very minute amount of grinding compound is placed on the valves to give it a seating surface, but this is not done with the sole intention of grinding in the valves. A specially designed chuck is used on this machine which positively centers a valve regardless of how badly its valve stem is worn out of round. All valves may be handled up to 3 in. in diameter having a $\frac{1}{2}$ in. stem. The angle seat may be varied from 25 to 65 deg. It is manufactured by the Cedar Rapids Engineering Co., Cedar Rapids, Iowa.

Sunnen Valve Lifter

The Sunnen universal valve lifter is designed to operate on any engine, and because of its special screw adjustment arrangement the valve lifter will always remain at its set position. The jaws are so designed that they tend to slide further on to the tappets and valve stem



C & R tool



Sonnen valve lifter

rather than kick out. The material of which the valve lifter is made is cold rolled steel. The price of the article is \$2.00. It is made by Sunnen Products Co., 2717 LaFayette avenue, St. Louis.

C & R Tool

This tool is designed for removing and replacing valve keys, cotter pins, taper pins, magneto and carburetor screws and parts. It is convenient for reaching the "hard to get at" places. The operation is simple. Pressing the spring at one end of the tool expands the conical shaped die at the other end, which is in four sections. The tool is then placed over the screw or pin to be removed and the pressure on the spring released. This causes the die to contract and a firm hold on the screw is obtained. The Wedler-Shuford Co., 10th and Locust St., St. Louis.

Socket Wrench Set

Because of its adaptability to all makes of automobiles the Larson socket set No. L-53, is especially convenient for garagemen. It contains the following: One 12-in. ratchet wrench, one 9 $\frac{1}{2}$ -in. extension bar, one universal joint, one spark plug socket 29/32 in., one spark plug socket 15/32 in. and nineteen hexagon sockets. The complete set comes in a wooden box and sells at \$10. Larson Tool & Stamping Co., Olive St., Attleboro, Mass.



Self-holding screw driver



Kwik-way valve facer

Automatic Self Holding Screw Driver

This tool was designed with the intention of giving the machinist, car owner, repairman and especially the electrician, a tool that will hold a screw on the point of the driver blade and thus eliminate the danger of injury and possible death by coming in too close contact with the moving machinery. The working principle of this tool is mainly that a screw can be placed on the two point blade and securely locked by means of the spring lever rod. It is said to require over 40 lb. pull to separate the screw from the driver. The two point blade fits into any slot of a screw from 8/36 to $\frac{1}{4}$ in. The handle is of hardwood and the blade of a good grade spring steel. The electrician's tool is entirely insulated against current leakage. This tool will be placed on the market by Paul E. W. Kruger, M. E., Portage, Wis.

Boe Barrel Oil Pump

An oil pump which can be attached to any 30 to 55 gal. wood or steel barrel is manufactured by the Boe Mfg. Co., Minneapolis. It measures accurately one quart or pint to each pump stroke. A ringed hook "C" governs the pint stroke. The overflow drains back into the barrel from a large drain pan as shown. It sells, complete, for \$25. A double action grease pump is another product of the Boe company. It has a capacity of 125 lb. grease or about 15 $\frac{1}{2}$ gal. oil, and handles at 75 lb. air pressure, according to the manufacturers, any such lubricants as will barely flow and also the softer grades. For the softer grades of grease it can be operated by hand.



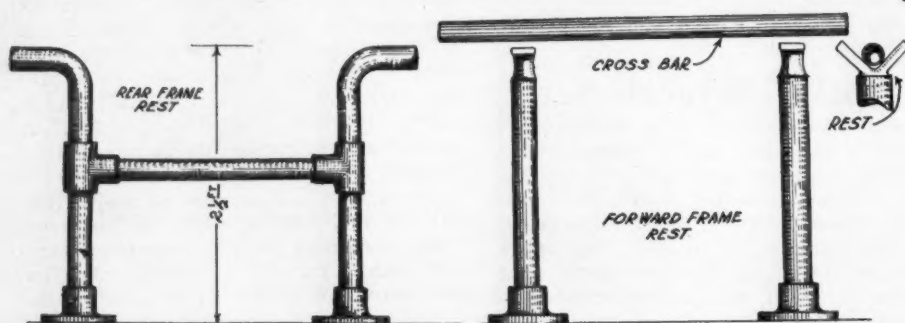
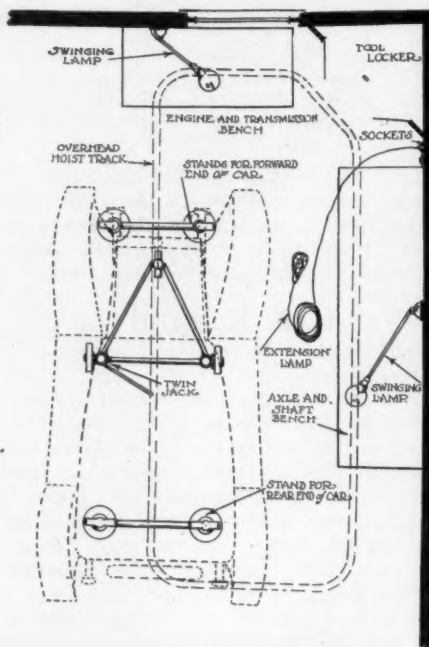
Boe barrel oil pump

The Automotive Repair Shop

Practical Maintenance Hints

Shop Equipment Details Planned for Systematic Repairing

THE purpose of the arrangement depicted in the sketch is to expedite the repairs on a job regardless of the amount of repairs involved. The main idea that is to be kept in mind with any arrangement of shop equipment is to concentrate on the job at hand until every part is complete and the car is out of the shop. Inspection of many shops will frequently show several jobs each in various stages of completion. This lacks of being efficient for the reason that the workman or workmen involved are shifting tools and car parts from place to place, misplacing this piece or a tool and frequently forgetting what is to be done. Keeping on one job until it is done has one main feature to recommend it, the time consumed to get this work done and out of the shop is easily accounted for. Second, the less the mechanics are required to walk about the shop the shorter will be the time required to get the job well under way. This arrangement requires that each part always be in readiness so that immediately the car is rolled



in the mechanics put it up in readiness for repair.

The procedure will be as follows: The overhead hoist lifts the front axle and two frame stands are put in place. The rear end is raised and the twin frame stand is placed underneath. The car wheels are about 20 in. above the floor with ample room under for working. The engine is removed if required to the bench forward of the car or the transmission is removed and placed at the same bench. For rear axles, drive shaft and front axle repairs these units are placed on the bench at the right side, which is a long bench for these longer parts. A tool cabinet in the corner is equally accessible to either bench. One fixed swinging light is shown above each bench and one extension light is provided for use at the car and an additional lamp socket is provided to plug into when an extra extension is required.

A twin jack is part of the equipment

for use in taking out the rear axle or front axle. Open spaces under these benches are for wheel, fender, radiator and hood storage. Every part of the car under repair is kept at these benches unless some particular unit must be carried to a machine. Before removal from the stands every part is replaced, the job is inspected and the surrounding space is clear of all parts belonging to the job. When the stands are removed and the car wheeled away the equipment is ready immediately for undertaking the next job without delay.

Refinements in Patching Jobs

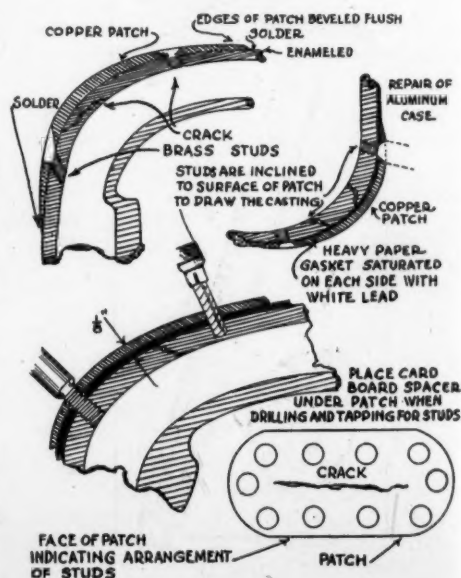
Quality of workmanship is as desirable in a patch job as in other tasks and the sketches illustrate methods which obtain serviceable repairs when welding is not available or the peculiar requirements of a job make welding impracticable.

The principal detail in putting on a patch is to close the opening as tightly as possible to prevent oil or water leakage. For this purpose a method much preferable to putting in the screws at right angles to the surface of the casting is to set them at an angle to the surface and draw the patch across the break. This requires the tapped holes to be made inclined to the surface of the patch.

When the spacer is removed and the screws placed the patch draws the edges of the break together. It is advisable to tin the surface of the part if of iron or steel and the face of the patch, then when secured with screws a hot soldering bit will make an oil tight or water tight joint, otherwise paper saturated with white lead is placed under the patch. When the repair is made a coarse file should be used to bevel down the edges of the patch flush with the adjacent surface. With a coat of enamel over the surface a patch is made which is hard to detect.

Keeping Molds Hot

Sometimes the tire repairman is puzzled over the action of one of his cavities due to inability to heat it up. Boiler pressure and every other detail may be all right and still the cavity refuses to heat. Careful examination may show that air has collected in the leg at each side of the cavity and due to the construction once the air lodges there there is little possibility of it being carried away. The obvious remedy is to install a pet cock at the top of each leg so that the air may be drawn off periodically.—Greene Tire Sales Co., Philadelphia, Pa.



Law in Your Business



By Wellington Gustin



Collecting Bills Against Cars

What is the law in state of Kansas in regard to collecting bills on cars where they have been allowed to be taken out of our possession and promise made to pay in a few weeks or perhaps longer time; also where accessories and labor are against them?

In the state of Kansas how long do we have to hold a car before we can sell it to collect bills?—Rosenbalm & Mathews, Powhattan, Kan.

The Kansas legislature amended its lien laws in 1917 giving the garageman a lien on personal property, as follows:

"Section 6092. That a first and prior lien is hereby created in favor of any blacksmith, horseshoer, wagonmaker, keeper of garage, or any other person upon any goods, chattels, horses, mules, wagons, buggies or other vehicles or automobiles and any farm implements of whatsoever kind, which shall have come into the possession of such blacksmith, horseshoer, wagonmaker, keeper of garage, or any other person for the purpose of having work done on said property, or repairs, or improvements in any wise appertaining thereto, and said lien shall amount to the full amount and reasonable value of the services performed. And shall extend to, and include the reasonable value of all material used in the performance of such services."

"Section 6093 *** That said lien shall be filed for record with the recorder of the county in which said services were rendered within sixty days thereafter."

"Section 6094 *** That said lien may be enforced and foreclosed as chattel mortgages are now enforced and foreclosed."

This last section is explained by the law of chattel mortgages, section 6503, laws of Kansas:

"after condition broken, the mortgage or his assignee may proceed to sell the mortgaged property, or so much thereof as may be necessary to satisfy the mortgage and costs of sale, having first given notice of the time and place of sale by written or printed hand bills posted up at least four public places in the township or city in which the property is to be sold, at least ten days previous to the sale."

You may sell the car after giving this ten day notice as required.

Under your statute you do not have to retain possession of the car to enforce your lien.

Have You a Legal Difficulty?

SEEMINGLY knotty legal problems are constantly arising in the dealer's business, which even a slight knowledge of the law easily may solve. MOTOR AGE presents here the most common legal problems which confront the dealer. Mr. Gustin, a member of the Chicago bar, not only is well versed in the law relating to the dealer, but presents it in such a way as to be readily understood by the layman. In addition to his articles, Mr. Gustin will gladly answer such individual inquiries on knotty points as may be submitted to him.

Right of Way

What is the status of the plaintiff in a case like this?

The plaintiff, A, is approaching a cross street onto which he desires to turn to the left. The defendant, B, on this cross street is approaching the street along which A is driving. B also desires to turn into the main street to the left. If both were due to reach the corner at the same time which would have right of way?

As it is A started to make the turn and was half way around when B tried to cut in ahead and the cars came together on the corner with A's car striking B's midships.

A contends that B tried to cut across and did not go beyond the center of the intersection and that he did not give a signal of his intention to turn.

B contends that A gave no signal and that he is entitled to payment for the repairs to his car as his was the one hit.—Bradford Motor Co., San Jose, Cal.

Many of the cities and states have special ordinances or statutes giving the right of way to the automobile approaching from the right at intersecting streets. Unless you have such a law in your city or state then neither A or B would have the right of way, the rights of each being equal, each being bound to exercise care to avoid injury to the other. Neither A or B is justified in assuming that the other will stop to let him pass.

The question of signals appears to be a disputed one. However, most cities by ordinance make the cutting of corners or the failure to keep to the right of the center of the street intersection, negligence in itself. If B were negligent in cutting the corner then he would be liable unless A was also negligent contributing to the accident.

The simple fact that B's car was struck on the left side of the intersecting center would not prove his negligence, for it might be turned there to avoid the impending collision, or there might be other

circumstances showing no negligence on B's part. But if B cannot show this contributory negligence his position must stand evidence against himself.

In Cook or Miller, 166 Pac. 316, the Supreme Court of California said that where a driver was under no necessity of cutting a corner with his automobile and the city's ordinance required him to go around to the right of the intersection, it was legal negligence for him to do otherwise.

In the case of Perez vs. Hartman, the California Court of Appeals said that the violation of the Motor Vehicle Act, requiring vehicles approaching intersections of street, road, or highway to keep to the right of and run to and beyond the center of such intersection, in turning to the left, constitutes negligence.

And where the accident would not have taken place but for the automobile driver's violation of the Motor Vehicle Act, prohibiting the cutting of corners in turning to the left at street intersections, the driver is liable, though the accident occurred after he had turned into the intersecting street 15 or 20 ft. from the curb line of the street along which he had been driving.

On the facts presented A appears to have a good cause of action or defense as the case may demand.

City License for Gasoline Storage Plant

In our city we have a problem before us the licensing of gasoline storage in tank car lots of 10,000 gal. or more.

Will you please advise us regarding the rights of adjoining property owners insofar as permission or objection to the building, maintenance, and operation of such storage plant is concerned?

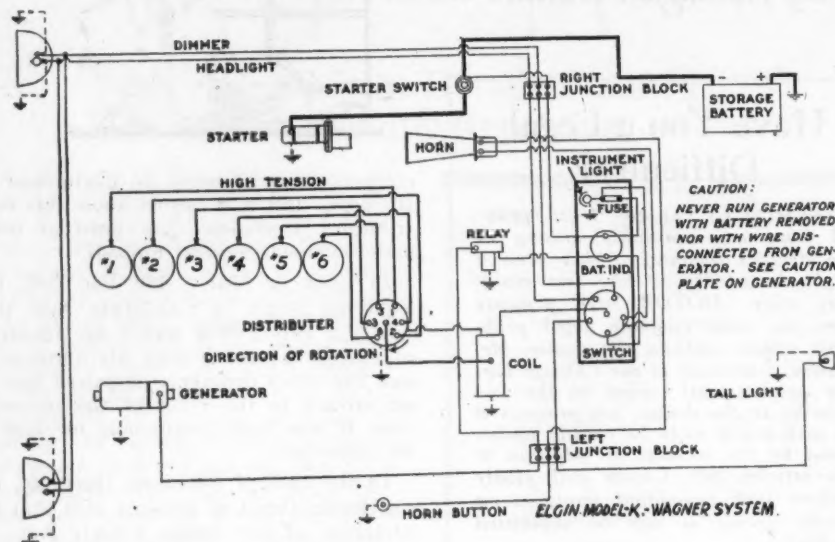
The courts have held that the storage of gasoline in tanks, located within the limits of a city, where adjoining lots were built upon, was not in itself a nuisance which might be enjoined, but the owners of such tanks have been held to diligence in protecting the public from injury or discomfort therefrom.

Now whether storage as you mention is a nuisance depends upon the locality, the quantity and the surrounding circumstances, and the method and manner of keeping and use. (63 Atlantic 836.)

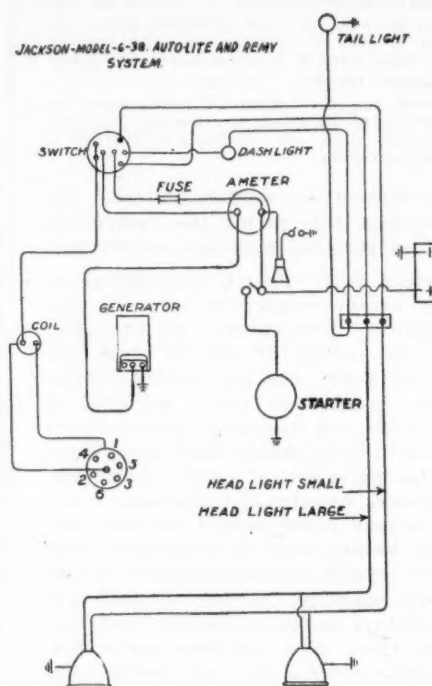
As I understand it the parties do not have to obtain consent of the property owners; but if proper dangerous conditions can be shown to exist, then the remedy of the property owner would be to get a restraining order against the storage plant.

Motor Age Weekly Wiring Chart No. 120

1920 Elgin, Model K—Wagner System

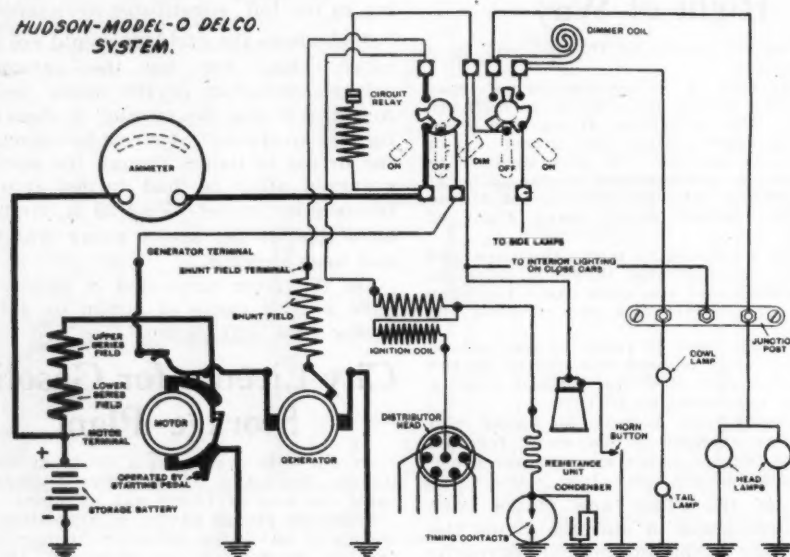


1920 Jackson, Model 6-38 — Auto-Lite and Remy System



1920 Hudson, Model O—Delco System

HUDSON-MODEL-O DELCO SYSTEM.



Name of Car and Date on Which Wiring Diagrams Have Appeared in Previous Issues

Allen—Sept. 30, '20
American Beauty—Feb. 17, '21
Buick—Dec. 23, '20
Cadillac—Nov. 18, '20
Case—Oct. 7, '20; Feb. 17, '21
Chalmers—Feb. 24, '21
Cleveland—Feb. 24, '21
Cole—Dec. 9, '20
Jan. 6, '21; Jan. 20, '21
Daniels—Feb. 17, '21
Dorris—Dec. 9, '20; Feb. 24, '21

Elcar—Oct. 28, '20
Dec. 2, '20
Elkhart—March 3, '20
Elgin—Oct. 14, '20
Franklin—Dec. 2, '20
Grant—Nov. 25, '20
Hudson—Jan. 13, '21
Hupmobile—Feb. 3, '21
Jordan—March 10, '21
King—March 3, '21
Kissel—Oct. 21, '20
Lexington—Dec. 16, '20
Mitchell—Jan. 6, '21

Moore—Nov. 11, '20
Moline-Knight—Nov. 4, '20
National—Dec. 16, '20
March 10, '21
Oldsmobile—Sept. 16, '20
Nov. 25, '20
Dec. 23, '20
Packard—Oct. 7, '20
Paige—March 10, '21
Peerless—Nov. 18, '20
March 3, '21
Pierce-Arrow—Feb. 10, '21
Premier—Feb. 10, '21
Reo—Feb. 10, '21

Roamer—Dec. 30, '20
Feb. 10, '21
Saxon—Oct. 21, '20
Dec. 30, '20
Scripps-Booth—Feb. 3, '21
Sheridan—Feb. 3, '21
Stearns—Nov. 4, '20
Jan. 13, '21
Stephens—Sept. 16, '20
Studebaker—Oct. 29, '20
Velie—Jan. 20, '21
Willys-Knight—Oct. 14, '20

Additional Wiring Diagrams May Be Found in the Readers' Clearing House in This Issue

Passenger Car Serial Numbers

Motor Age Maintenance Data Sheet No. 141

One of a series of weekly pages of information valuable to service men and dealers—save this page

(Continued from last week.)

BIDDLE

Year	Model	Cyls.	Price	Serial Numbers
1915	C	4	\$1700	C200-C299
1916	D	4	1700-	
1917	D	4	1850	D300
1918	H	4	2275	D
1919	H	4	2750	H100-H1099
1919	H	4	2985	H1100-H1179
1920	B-1	4	3950	2000 up
	B-5	4	-----	1500 up

Number on dash; engine number on upper left front crankcase

BOUR-DAVIS

Year	Model	Cyls.	Price	Serial Numbers
916	17	6	\$1250	1-267
				Number on dash under hood; engine number on left side crankcase
.7	17-B	6	1500	1000-1022
				Number on top of seat frame under cushion
918	18-B	6	1850	1100-1104
919	-----	-----	-----	1105-1134
				Number on dash under hood. No record of 10 or 12 cars built by Shadburn Bros., Anderson, Ind.
1920	20	6	1595	1 up
	-----	-----	1700	
1920	-----	-----	9/1/19	

Number on front seat base opposite left hand door; engine number on left side crankcase

BREWSTER

Year	Model	Cyls.	Price	Serial Numbers
1915	41	4	-----	
1916	41	4	-----	41001-41242
1917	41	4	-----	
1918	41	4	-----	
1919	91	4	-----	91242-91241
1920	-----	4	-----	91243 up

Number plate on front of dash

BRISCOE

Year	Model	Cyls.	Price	Serial Numbers
1914-15	B-15	4	-----	101-4000
1916	4-38 & 8-38	4	-----	5001-8751
				Number on front seat heel board
1917	4-24	4	-----	15001-18846
1917-18	4-24	4	-----	18847-26604
1919	4-24	4	-----	26605-34885
1920	4-34	4	\$1285	34886-45786
				M-550 up
				Number on Models B-15, 4-38 and 8-38 on front seat heel board; model 4-24 on dash

BUICK

Year	Model	Cyls.	Price	Serial Numbers
1912	34-35	4	\$900	
			1000	
	36	4	900	
	28-29	4	1025	
			1180	
1918	43	4	1725	
	24-25	4	950	
			1050	
	30-31	4	1125	
			1285	
	40	4	1650	
				Number on rear cross frame member; engine number on left side of crankcase
1914	B-24-25	4	950	
			1050	
	B-36-37	4	1235	
			1335	
1915	B-55	6	1985	
	C-25-24	4	900	100000-144715
			950	
	C-36-37	4	1185	
			1235	
	C-54-55	6	1635	
			1650	

BUICK (Continued)—

Year	Model	Cyls.	Price	Serial Numbers
1916	D-44-45	6	985	
			1020	144717-254501
	D-54-55	6	1450	
			1485	
1917	D-44-45-46	6	1040	
			1070	254502-343782
			1440	
	D-34-35-37	4	660	
			675	
	E-49	6	1385	
1918	E-4-34-35	4	795	
	E-6-44	6	1265	
	E-6-45-46	6	1265	343783-480995
			1695	
	E-6-49-50	6	1495	
			2175	
				Number on left front side of frame member; engine number on left side crankcase
1919	H-44-45	6	1495	
	H-46-47	6	1985	
			2195	480996 up
	H-49-50	6	1785	
			2585	
				Number on rear end of left frame member; engine number on left side crankcase

CADILLAC

Year	Model	Cyls.	Price	Serial Numbers
1912	1912	4	\$1800	61006-75000
1913	1913	4	1975	75001-90018
1914	1914	4	1975	91005-99999
				A1-A5008
1915	Type 51	8	1975	A6000-A19001
1916	Type 53	8	2080	A20000-A38003
1917	Type 55	8	2080	
	before Dec. 14, 1917		\$2240	55-A1-55-S2
	after Dec. 14, 1917		\$2240	
1918-19	Type 57	8	3220	57-A1-57-1000—57-TT-146
1920	Type 59	8	3490	59-A-1

Number on left front of engine in four-cylinder models. Number back of the right cylinder block on eights. For 1917 and 1918 the figures in front of letter indicate type of car, the number following letter the number of engine for that particular letter. There are 1000 numbers for each letter of the alphabet

CAMPBELL

Year	Model	Cyls.	Price	Serial Numbers
1918	-----	4	\$ 835	1-537
1919	C-4	4	1000	538 up
				Number plate on left side of dash under hood

CASE

Year	Model	Cyls.	Price	Serial Numbers
1912	M	4	\$2050	15000-16224
1913	N	4	1500	19001-20253
	O	4	2200	22001-22750
1914	O	4	2300	
	R	4	1250	22751-26333
	S	4	1850	
1915	R	4	1350	26334-28340
1916	T	4	1190	28341-51350
1917	T-17	4	1190	31351-32354
1918	U-18	6	1875	32355-34856
	U-19	6	2100	
1920	V	6	2400	34857 up
				Number on dash and on front cross bar of frame

COMING MOTOR EVENTS

AUTOMOBILE SHOWS

Richmond, Va.	Automobile Show	March 12-19
Newark, N. J.	Automobile Show	March 12-19
Boston, Mass.	Annual Show	March 12-19
Omaha, Neb.	Annual Automobile Show	March 14-19
Washington	Annual Automobile Show	March 14-19
East St. Louis, Ill.	Automobile Show	March 16-19
Uniontown, Pa.	Automobile Show	March 16-19
Greenville, S. C.	Automobile Show	March 16-19
Detroit	Annual Automobile Show	March 19-26
Peoria, Ill.	Automobile Show	March 19-26
Torrington, Conn.	Annual Automobile Show	March 20-26
Cedar Rapids, Ia.	Automobile Show	March 21-26
Fort Worth, Tex.	Automobile Show	March 21-26
Ottumwa, Iowa	Annual Automobile Show	March 23-26
Greenfield, Mass.	Automotive Show	March 28-April 2
Columbia, S. C.	Automobile Show	March 28-April 2
New Britain, Conn.	Automotive Show	March 30-April 2
Chattanooga, Tenn.	Annual Automobile Show	April
Charlotte, N. C.	Automobile Show	April 4-9
Bridgeton, N. J.	Annual Automobile Show	April 2-9
Gloversville, N. Y.	Annual Automobile Show	April 3-9

Denver	Automobile Show	April 4-9
Seattle	Annual Automobile Show	April 4-9
Mexico City	Automobile Show	April 20-May 5
Buffalo	First Annual Motors and Sportsmen's Show	April 11-16
Charlotte, N. C.	Carolinas Automobile Show	April 11-16
Lincoln, Ill.	Automobile Show	April 21-23

TRACTOR SHOWS

Scranton, Pa.	Truck & Tractor Show	March 14-17
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RACES

Indianapolis Sp'wy.	500 Mile Race	May 30
Uniontown Sp'wy.		June 18
Cincinnati	Speedway Race (Possible)	July 4
Tacoma	Speedway Race	July 4
Strasbourg	French Grand Prix	July 28
Elgin	Road Race (Possible)	August 3
Pikes Peak	Hill Climb	September 5
Uniontown Sp'wy.	Annual Autumn Classic	September 5
Los Angeles	Speedway Race	November 24

Business Notes

The Wisconsin Elkhart Co. of Milwaukee has been incorporated with \$20,000 capital to become distributor of the Crow-Elkhart and the Huffman truck in the Wisconsin territory. The president and manager is F. J. Noetzel, who also is head of the Elkhart Sales Co., Inc., Milwaukee, distributor of the Elcar. The two concerns have separate and distinct headquarters and staffs.

The Overland Wisconsin Co., Milwaukee, distributor of the Overland, Willys-Knight, etc., in Wisconsin, has recently increased its capitalization from \$50,000 to \$250,000 to accommodate its increasing business.

The Donald Murray Tractor Co. of Wausau, Wis., is a new \$25,000 corporation organized to take over the distribution of the Holt tractor in Wood, Marathon, Lincoln, Oneida, Forest, Langlade, Shawano and Oconto counties, Wisconsin. This franchise until now was held by the Murray-Mylrea Co. of Antigo, Wis., which recently sold

its large foundry and machine shop to the Antigo Tractor Co. Donald Murray remains associated with the enterprise for the time being, but will devote most of his attention to the new Wausau company, of which he is president.

The Highway Motors Co., Defiance, Ohio, announces that it will soon start the erection of a plant for the manufacture of tractors and truck motors. Charles H. Kettering of Dayton is president of the company, which has been making passenger cars exclusively.

The Marvel Shock Absorber Co., Cleveland, has been chartered with a capital of \$100,000 to manufacture shock absorbers of a patented variety. Incorporators are S. L. Savidge, A. W. Rener, Carl H. Cook, E. C. Savidge and Minta Rener.

The Climax Rubber Co. stockholders at their annual meeting at the home office in Columbus approved reports of progress made during the past year. The new die from which the compression inner tubes are to be made was exhibited and pronounced a success in every way. Plans

for increased capacity and extensive development of the sales organization were discussed. The company recently sold its Huntington, W. Va., plant and secured the plant of the K. & W. Rubber Co. at Delaware, to which the machinery and equipment from the Huntington plant were removed. The Delaware plant has now become the main plant. Irving S. Hoffman was elected president, Herman A. Longshore vice-president, Clyde B. Turner secretary and treasurer and E. W. Pavey, sales manager.

Curran Motor Products Co., with offices in Detroit, has been organized with a capital of \$100,000 to market automobile accessories, chiefly the product of the inventive mind of Dr. E. T. Curran of that city. The company's output will include an automobile thermometer, a priming cup device and a spark plug. Manufacturing, assembling and distribution will be handled in Detroit, with distributing branches in New York, Chicago, Los Angeles and Minneapolis. Dr. Curran is president, W. N. Nahlikian, vice-president, P. M. McKay, secretary-treasurer, and P. T. Quinn sales manager.

The Kelsey Wheel Co., manufacturer at Memphis, Tenn., of wheels and automobile bodies, has begun a general resumption of operations, following an inactive period. Ten per cent capacity runs were made on the opening day and from week to week a return to normal standards will be accomplished. One hundred employees have returned to work, the total employment under normal conditions being 800 men.

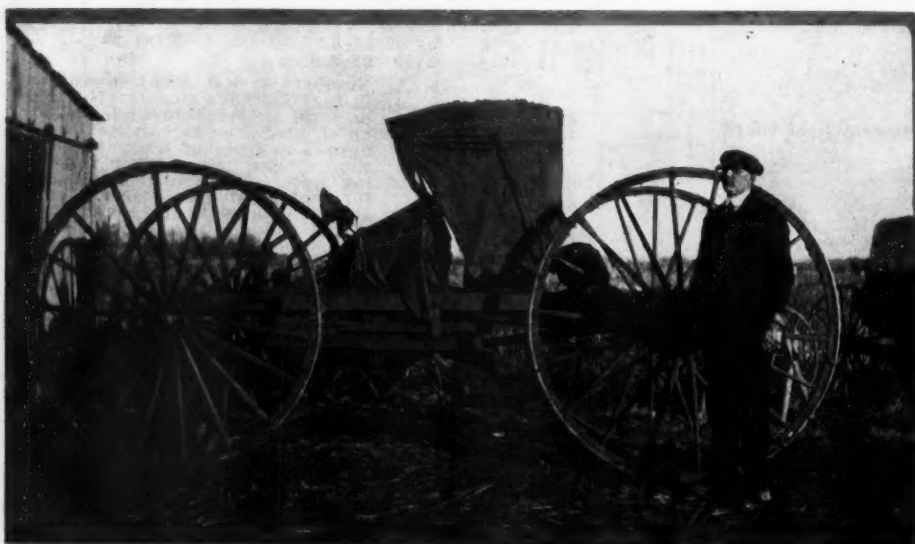
Davis Steam Motors, Inc., Detroit, with a capital of \$100,000 in shares of \$10 par value, has been organized to market a steam engine for use in both passenger cars and trucks. The incorporators are Merrill Davis, E. M. Bliss, F. D. Siebert and A. B. Eggert. A new car equipped with the steam engine and several other new features will be produced, according to Mr. Eggert, although the plans for the company's future, he said, were not ready to be disclosed.

The Dearborn Truck Co., whose general offices were formerly located at 2015 South Michigan avenue, Chicago, has recently moved into larger quarters situated on the ground floor at 2911-15 Indiana avenue, that city. The new location places them in closer touch with their factory in Chicago where a complete line of trucks and form-a-truck is manufactured and where service is rendered to their city business. The city sales offices which heretofore occupied separate quarters have now been consolidated with the general offices.

The Topp-Stewart Tractor Co. of Clintonville, Wis., at its annual meeting, increased the number of its directors from seven to nine, the new members being H. A. Rindt and Theodore Meyer. Officers were re-elected as follows: President, Dr. W. H. Finney; vice-president, H. F. Zarling; secretary, A. C. Cather; treasurer, Levi C. Larson.

The Moto-Meter Co., Inc., of Long Island City, through President George H. Townsend and E. V. Hennecke, the sales manager who recently returned from abroad, has made arrangements for the establishing of branch factories in England and France. The Benjamin Electric Ltd. of Tottenham, London, will have charge of the manufacture in England and the French factory will be conducted in Paris by F. Represseau et Cie.

If the Roads Are Muddy, Try This



Dr. W. A. Klingberg of Elmo, Kas., is one country practitioner who doesn't stop for rain, snow or mud. The good roads in many Kansas rural communities have been built largely on paper and they are good roads when they're dry. But when they are wet— Doctor Klingberg needed a car which would travel the mud without skidding or getting stuck, so he planned it himself. The basis of his snappy model is by Ford and the body and wheels by Klingberg. The top is off an old buggy and the wheels were taken off a farm wagon. A country blacksmith put the contraption together and the doctor does the chauffing